The milk crisis grieves us [the government] as much as it does the parents. We also feel guilty over this incident, which has exposed many problems along the milk supply chain [...] Not only has the crisis revealed shortcomings in governmental supervision, it also reflects the lack of professional ethics and social responsibility among corporations [...] The situation must be rectified immediately. Those irresponsible enterprises and implicated leaders must be penalised. Not a single one of them should get away with this!

- Wen Jiabao, prime minister of China

On 12 September 2008, the Chinese government ordered the nation’s biggest manufacturer of milk powder, Sanlu Group (“Sanlu”), to halt production because its powdered infant formula was found to contain melamine, a nitrogen-rich chemical, ingestion of which could cause kidney stones. The national inspection agency further discovered that milk products manufactured by 21 other dairy companies tested positive for melamine. Sanlu was reported to have received its first complaint of illness as early as December 2007. However, news of the problem only surfaced nationwide after Sanlu’s New Zealand partner, Fonterra Cooperative Group (“Fonterra”), alerted the New Zealand government in September 2008.

Soon after the scandal broke, Sanlu apologised publicly for the incident and said that its milk suppliers had added melamine to the milk before selling it to them. However, the company failed to explain the delay in alerting the public to the contamination. The local government of Shijiazhuang, where Sanlu was headquartered, was also blamed for holding back the news from the central government.
By the end of September 2008, about 53,000 young children were found to have been sickened due to consumption of melamine-laced dairy products, and at least four babies had died from kidney failure. The melamine scare resulted in many countries recalling and banning goods using milk products from China. The milk crisis was soon regarded by the World Health Organisation (“WHO”) as one of the largest food-safety events in recent decades. While the Sanlu incident triggered widespread probes into the safety of food products made in China, it spotlighted the inadequacy of the entire dairy supply chain in China. The government and the industry had to take steps to restore confidence and ensure the quality of the Chinese dairy supply.

**China’s Dairy Industry**

Along with China’s growing per capita income and the people’s increasing desire for Western diets, demand for milk and dairy products in the country had been on the increase. Between 2000 and 2007, China’s dairy consumption had increased at an average rate of 23% each year.\(^2\) In 2007, over 35 million tons of milk was produced, which was a five-fold increase over a decade before [see Exhibit 1]. Euromonitor, a global industrial research firm, estimated the value of China’s dairy market at US$18 billion in 2007.\(^3\) Nevertheless, the per capita dairy consumption in China [see Exhibit 2] was still much lower than that of many other countries. By 2005, compared to the average per capita annual consumption of 268kg in Western countries, 64kg in Japan and 50.9kg in developing countries, Chinese only consumed 22kg of milk per capita annually.\(^4\) Over the years, the Chinese government had been promoting the health benefits of dairy consumption, with the hope that all Chinese, particularly children, would drink half a litre of milk every day.\(^5\)

**Dairy Consumption Patterns in China**

Research showed that fluid dairy such as pasteurised milk and milk processed through ultra-high-temperature processing (“UHT”)\(^6\) were the most widely consumed dairy products in urban areas of China, whereas in the outlying areas where refrigeration and UHT milk were less affordable for the lower-income population, milk powder was consumed for convenience.\(^7\) Infant formula in particular had been increasing in popularity, largely due to heavy advertising by producers, who managed to convince many young Chinese parents of the nutritional value and quality of their products. As a result, breastfeeding was declining in China, with the percentage of poor rural women who breastfed reducing from 62% in 2000 to 38% in 2005. Wealthier families also often opted to use infant formula to fit their busy

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\(^{6}\) Pasteurised milk was processed through heating milk to a certain temperature for at least 15 seconds in order to kill harmful bacteria. Pasteurised milk was normally perishable and needed to be stored cool. UHT milk was sterilised at a much higher temperature and for a shorter period of time (only one to two seconds), thereby reducing the loss of nutrients caused by overheating. UHT milk could be stored unrefrigerated and had a longer shelf life of six to nine months. UHT milk was normally packaged in Swedish Tetra Pak packaging, which allowed liquid food to be stored under room-temperature conditions for up to one year. By the end of November 2004, UHT milk comprised 70% of China’s milk market, while pasteurised milk accounted for the remaining 30%. See: Wikipedia (2008) “Ultra-High-Temperature Processing”; http://en.wikipedia.org/wiki/Ultra-high-temperature_processing (accessed 25 November 2008); and Xinhu.net (11 November 2004) “Milk Firm, Paper Maker Establish Partnership”, http://news.xinhu.net/2004-11/11/content_2202478.htm (accessed 25 November 2008).

Taking advantage of this trend, some unscrupulous producers of infant formula had made and sold low-quality milk products for higher profit and personal gain. The notorious “big head disease” scandal in 2004 was a tragedy caused by unbridled greed. Heads of affected babies grew disproportionately large after they consumed poor-quality infant formula. A full-scale investigation into all types of milk-powder products was launched throughout China at that time. Even though no toxicity was found in any of the products tested, many of these products were found to have only negligible protein content that did not meet nutritional standards. At least 13 babies in the country had died of malnutrition after consuming the fake milk. The scandal generated an unfavourable impression not only of China’s food safety but also of the operations and quality control in the country’s dairy industry.

Reform of China’s Dairy Industry in the 1980s

During its nascent stage in the early 1980s, China’s dairy industry began with state-owned companies that made dairy products from milk sourced from their own farms and cows. Operating on a self-sufficient basis, the development of these state-owned diaries had been limited by their low milk supplies and lack of business focus. The industry’s landscape began to change in 1987, when a dairy company in Hebei province, Sanlu (formerly Shijiazhuang Dairy Co.) started selling cows to local farmers through extending loans to them. These farmers repaid their loan debts with fresh milk. Many farmers in Hebei flocked to Sanlu and started rearing cows on their own. During this period of time, milk-collection stations emerged as the intermediary links between farmers and the dairy. The local government provided land for milk-collection stations to be built, while the farmers managed and funded the milk stations with subsidies from the government and Sanlu. Under the leadership of Sanlu’s chairwoman, Tian Wenhua, who was also a Chinese Communist Party official, the company shifted its focus from farming to mass production and marketing of dairy products. This new business model, which significantly increased the company’s production, farmers’ profitability and job opportunities, was imitated by other dairies across China.

Dairy Companies in China

Dairy companies in China were few enough at the beginning of China’s reform of the milk industry in the late 1980s to make it a buyers’ market. At the time, dairies were very selective when deciding who would supply them milk. In the early and mid-1990s, foreign multinational dairy enterprises (eg, Fonterra, Nestlé and Danone) tapped into the Chinese market. New private and jointly-owned dairy companies also entered the market starting in 2005. In competition with foreign multinational dairies, local dairy companies responded by improving their product quality and diversifying their product offerings. They also sought the support of foreign capital and technology transfer by forming joint ventures with foreign dairies. Among hundreds of dairy enterprises in China, Inner Mongolia Yili Industrial Group (“Yili”), Mengniu and Bright Dairy were the three largest dairy-product makers, respectively.
collectively controlling over 60% of the nation’s dairy market. In the milk-powder sector, Sanlu was the largest producer. Other popular and large milk-powder producers in China were Sanyuan, Yashili and Shengyuan. Even though the number of producers of milk powder increased along with the rising number of dairy farmers, the manufacturers were still relatively more concentrated than the farmers, who were scattered widely across the country. Dairies thus rapidly expanded their operations across regions to secure milk supplies. As the inter-regional competition in both product sales and milk sources intensified, dairies were pressured to keep their costs low, even at the expense of their product quality, in order to stay competitive.

Operational Models of Dairy Farming

Major milk-producing regions in China included Inner Mongolia, Heilongjiang, Beijing and Hebei in the north, Xinjiang in the west, and the central Henan, Sichuan and Shandong provinces [see Exhibit 3]. By 2008, more than 80% of the dairy cows in China were owned by individual farmers scattered across the country. Some of the farmers, particularly those in rural areas, had little knowledge about how to take care of their cattle to ensure large yields and high-quality milk. In general, most of China’s dairy farming was operated on a small-scale and less-structural basis. Only 31% of the dairy farms in China kept more than 20 milk cows.

More-structural operational models included small farm complexes, cooperative dairy farms, and corporate-owned dairy farms. Small dairy-farm complexes, either privately owned or established by the government, functioned like trust companies, with farmers paying a small amount of management fees to the farm complex’s management in order to raise their cows there. Farmers could milk their cows in a central milking barn inside the farm complex. Individual farmers then sold their milk directly to dairy companies on a contractual basis. Alternatively, a co-operative farm was a co-operative organisation jointly owned by a few related parties, such as farmers, milk dealers, government agencies and dairy companies, who shared the investment costs and risks. This joint model encouraged scattered farmers to supply milk cows to co-operative farms, from which farmers could purchase small barns in which to feed their cows, and residential units for themselves and their families. Farmers also used the central milk-collection areas provided by the co-operative to milk their cows. Some large dairy corporations such as Yili and Mengniu also established their own sophisticated dairy facilities. However, their own facilities could only produce 10% of the total volume consumed. Dairies thus relied on scattered, household farms to provide them with raw milk through milk-collection stations.

Danone in 2001; however, Danone sold its entire stake in Bright Dairy in 2007 after discovering that it could not seize a controlling position in the state-controlled enterprise due to the state-directed consolidation of the food and beverages market, which aimed to strengthen local groups in the face of increasing foreign competition. The French company subsequently joined hands with Mengniu to focus on promoting yogurt products.

Milk-Collection Stations and Farmers’ Ordeal

By 2008, an estimated 80% of all milk from small-scale farmers was sold to milk-collection stations, which resold to dairies, and more than 54% of the milk stations were private operations.\(^{20}\) There was no unified supervision system for milk stations in China, nor was there a specific agency in charge of the supervision of milk stations.\(^{21}\) Many milk-collection stations in rural areas had poor infrastructure, inadequate management systems and insufficient milk-safety awareness. Some milk stations even existed without valid licences to operate and had no formal contracts with the farmers who supplied them with milk or with the dairies that purchased the milk from them. Operating without a formal supervisory policy or contract, many farmers and milk dealers could decide whom they wanted to sell their milk to, and usually those who offered the highest price got the bid. During periods of peak demand, desperate dairy companies paid for milk regardless of the quality or source. However, the perishability of raw milk also put farmers at a disadvantage when it came to bargaining for a good price. There were times when small household farmers had to accept whatever price was offered by dairy companies, particularly during the off-peak processing season. Moreover, because individual farmers did not have collective bargaining power, milk stations usually had the say, and some of them even delayed payment to farmers for as long as half a year.

The intensified market competition pushed dairy companies to reduce their product prices to boost sales. To make up for the drop in profit margins, dairies transferred the cost pressure to upstream producers (ie, the milk-collection stations and dairy farmers). Dairy farmers who were at the very end of the upstream supply chain suffered the most. They were no longer making money by raising cows, especially when the price of dairy feed went up as inflation hit the country. Government statistics reported that 40% of dairy farmers lost money in 2006, 30% broke even, and the remaining farmers made only a slim profit.\(^{22}\) Consequently, some farmers killed their cows, aggravating the tight milk supply in China. In early 2007, the shortage of milk supplies pushed up the price of milk products. Meanwhile, the Chinese government passed measures to subsidise dairy farming to boost milk supplies. Before farmers could benefit from the subsidies, however, they faced another setback. By January 2008, China’s inflation rate rose to a record high of 7.1%, forcing the government to take up measures to stabilise market prices. As with other basic foods in China, the price of milk products was capped by the Chinese government. Again, dairy farmers had to absorb the cost pressure from dairy companies and milk stations by accepting lower payments.

Payment for Milk on Protein Content

Payment to dairy farmers for their milk was largely based on the volume they supplied. Ever since some dairy farmers and dealers in China had been found watering down milk to increase its volume, payment to dairy farmers also depended on the protein content and other quality indicators of the milk. To circumvent the stricter testing, some Chinese milk suppliers turned to adding nitrogen-rich urea\(^{23}\) to artificially boost the protein readings of their milk before it was sold to dairy companies. Chinese dairies usually tested the quality and protein content of milk supplied by farmers through measuring the milk’s crude protein level (ie, the total quantity of nitrogen in milk, regardless of whether it was protein- or non-protein-based

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\(^{23}\) Urea was a colourless substance containing nitrogen that was commonly found in mammals’ urine.
nitrogen). This conventional approach had been the standard for the milk and food industries in China and many other countries. However, countries such as France and Australia had shifted to true protein testing before payment, as crude protein testing could be manipulated through adding non-protein, nitrogen-rich compounds to the milk.

Sanlu was reported to have cut the price paid to dairy farmers during the time when prices for animal feed surged but milk prices were kept down by the government. In 2006, Sanlu paid farmers less than US$0.07 per pint of milk. Some dairy farmers therefore chose to cheat the company by diluting the milk with water and adding melamine, which was tasteless and odourless, to conceal it. When the government capped the price of milk in early 2008, it put further pressure on the dairy to impose tighter cost control, which eventually led to lower-quality milk.

**Product-Inspection Exemption Measures**

To encourage companies in China to impose self-regulation in quality control, the State Administration of Quality Supervision, Inspection and Quarantine (“AQSIQ”) introduced an inspection-exemption policy in 2000. According to the policy, exemption was given to any company in China with a large market share that had imposed standards equivalent to or beyond national or international levels. More importantly, a company had to possess a record of having passed state- or province-level quality inspections on three consecutive occasions. Companies that were qualified for the exemption could avoid the hassle of repeated examinations at different government levels. They were also allowed to print national inspection labels on their products, signifying quality assurance to customers. Top dairy companies such as Yili, Mengniu and Sanlu were inspection-free enterprises in China. Qualified companies still had to report the quality status of their inspection-free products regularly, while AQSIQ organised spot checks on these products randomly every year. Soon after the milk scandal occurred in September 2008, exemption status for all food products was officially revoked.

**Sanlu Group**

Sanlu (formerly Shijiazhuang Dairy Co.) was established in 1956 and started out as a small dairy in Shijiazhuang, the capital city of Hebei province. In 1983, it became the first enterprise in China to launch an infant formula. Largely attributed to Tian’s successful reform of the business model in 1987, the company had been a leading state-owned enterprise in both the agriculture and food-processing sectors of China. Over the years, the company shifted towards an outsourcing model to get its raw milk supply from third parties, and concentrated its core business on dairy-product manufacturing and marketing. It was also committed to dairy research and development, and to diversifying its milk-powder products to suit different age groups. In 1995, its advertisements for milk powder were broadcasted on the state-owned China Central Television (“CCTV”) during prime time, making it the first dairy company to advertise on the country’s most influential television network. Sanlu Group was eventually formed in 1996 and Tian became the president and general manager of the group. By

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24 Non-protein nitrogen (“NPN”) was composed of urea and other compounds containing low-molecular-weight nitrogen that had little nutritional value. Thus, NPN only artificially boosted the apparent protein level of foods it was added to. See: Barbano, D. and Lynch, J. (14 May 1999) “Fact Sheet—Milk Protein Testing—FAQ’s: Changing from Crude Protein to True Protein”, Cornell University Publications, http://www.cpdmp.cornell.edu/CPDMP/Pages/Publications/Pubs/tpfact.pdf (accessed 5 December 2008).

25 Ibid.


adopting a low-pricing strategy (products were priced one-third lower than those of other major brands in China), Sanlu dominated the medium- and lower-end market and successfully became the cost leader in the industry.

Sanlu’s Implication in the “Big Head Disease” Scandal

On 22 April 2004, a local newspaper in Fuyang city, Anhui province, published a list of tainted milk-powder brands that caused the “big head disease” among affected babies. Because Sanlu’s name was on the list, the group’s deputy general manager and other senior executives rushed to Fuyang to meet with the local government. The next day, Fuyang authorities held a press conference to extend an apology to Sanlu for their mistake in listing the company, claiming that it was a “mistake by related workers”. On 24 April, Sanlu held its own press conference to acknowledge the statements by the Fuyang authorities and clarify that the tainted milk powder initially detected by the inspection authority was merely a counterfeit product. Within one day, 93 news agencies in China were informed by Sanlu about the blacklist mistake. On 26 April, the Ministry of Health (“MoH”) and State Administration for Industry and Commerce jointly issued an emergency notice to all local governments, requesting that they resume sales of products manufactured by Sanlu, whose blacklisting had led to a loss of over US$10 million. The next day, Sanlu and other dairy enterprises conducted a symposium, “Resisting Killer Powdered Milk”, to promote self-discipline within the industry. Sanlu also promised not to make or market substandard dairy goods. Following the symposium, the company and nine food-security trusts made a donation of 4,985 boxes of infant formula to Fuyang. AQSIQ further announced a spot-check result, placing Sanlu first on the list of safe milk-powder brands in China. Sanlu’s handling of the incident later became a model for successful crisis management.

Joint Venture with Fonterra

In December 2005, Sanlu formed a joint venture with New Zealand-based Fonterra, which had bought a 43% stake in Sanlu for US$107 million. Fonterra was the world’s largest exporter of dairy products. It entered the Chinese market in the mid-1980s, with sales revenue mainly coming from milk powder and food ingredients sold in major cities along China’s east coast. The joint venture allowed Fonterra representatives to sit on the Sanlu board, but with no operational responsibilities. Through sharing distribution channels and expanding sales, the partnership had enhanced Sanlu’s leadership in the milk-powder market, particularly in the budget segment. In December 2005, AQSIQ granted Sanlu inspection-free status, and its brand became a “famous Chinese brand”, an honorary title officially awarded by the Chinese government to promote the worldwide recognition of Chinese brands. Both of these statuses were indicated on Sanlu products’ packaging to boost consumer confidence in the Sanlu brand. In 2006, Forbes magazine listed Sanlu as one of China’s top 100 enterprises.

Sanlu Production Facilities and Milk Supply

Sanlu had more than 30 production plants set up in several Chinese provinces, including Hebei, Shandong, Henan, Gansu, Jiangsu, Beijing and Tianjin. The group and its manufacturing divisions had a workforce of about 10,000 employees. It also had 30,000 salespersons across China and management offices in more than 600 Chinese cities. It
produced a variety of dairy products, including liquid milk and yogurt, though 83% of its capacity was attributed to milk-powder products. Co-operating with more than 60,000 rural households in 5,500 villages, the group procured a supply of 6,800 tons of fresh milk daily, from at least 80,000 cows. Most of its milk supply came from stand-alone milk-collection centres or those within dairy farm complexes throughout the milk-producing regions. To expand its market coverage, Sanlu had acquired or formed alliances with other dairy-processing companies in China, and the number of its partner producers had risen from 21 in 2004 to more than 40 by mid-2008. In addition to producing Sanlu-branded products, the group also produced milk under other brands, such as Wahaha and Feihe.

Award-Winning Sanlu Infant Formula

Before the joint venture, Sanlu’s sales revenue was recorded at US$742 million in 2004. In 2007, its sales reached US$1.47 billion, with brand value estimated at US$2.19 billion. It continued to retain its position as the nation’s top seller of milk powder for 15 consecutive years, dominating the market with 18% share in the milk-powder sector. On 2 September 2007, Sanlu was featured on a CCTV national programme, “Quality of Made in China”. It prided itself on being a Chinese company with stringent quality control, and claimed that its products had to go through numerous tests before being dispatched from the factory. A few months later, in January 2008, Sanlu won one of China’s top industrial awards at the National Scientific Techniques Awards for its innovativeness in infant-formula research and development. Given its stunning performance over the years, the company had planned for an initial public offering in the second half of 2008. However, this plan was dropped after the milk scandal was exposed in September 2008.

Sanlu’s Contaminated Milk Powder

On 11 September 2008, Sanlu’s powdered infant formula was reported to be highly suspected of being contaminated with melamine, a nitrogen-rich chemical that could cause kidney stones when consumed regularly in large doses. As a result, Sanlu ordered a recall of 700 tons of its infant formula manufactured on or before 6 August 2008. The next day, Sanlu admitted that its milk powder was adulterated with melamine, and AQSIQ ordered the group and its 38 subordinate enterprises across China to halt production. While the MoH notified the WHO of the incident, a team of 800 police officers were formed by the Shijiazhuang police to launch an investigation into the matter. AQSIQ also sent teams of inspection officers to Heilongjiang, Inner Mongolia and other major dairy-producing regions to conduct melamine tests on dairy products manufactured by Sanlu and other dairies. Among 175 manufacturers of infant formula across China, 66 were ordered to stop production and the remaining 109 had to...

31 In April 2006, Sanlu Group established a liquid-milk production base in Shandong that could produce 300,000 tons of liquid milk annually. Another Sanlu dairy programme in Henan province was launched in the same year with annual production of 100,000 tons of lactic-acid-bacteria drink and yogurt.
undergo inspection.38 Meanwhile, thousands of worried parents lined up in front of hospitals with their infants, seeking medical diagnoses and treatment. To deal with the overwhelming number of patients, the MoH ordered provinces, autonomous regions and municipalities to set up medical expert panels.

Sanlu’s vice-president, Zhang Zhenling, apologised to the public on 15 September, after two babies in Gansu province who had consumed Sanlu’s tainted infant formula died of kidney failure. The group pointed fingers at their raw-milk suppliers for having added melamine to the milk to artificially increase protein levels.

Sanlu Found to Have Highest Level of Melamine Contamination

On 16 September 2008, AQSIQ revealed the test results of 490 samples of infant milk powder from 109 brands in China. The tests indicated that 69 batches of infant formula from 22 brands were tainted with melamine. Among all the tested brands, Sanlu topped the rankings for contamination; all 11 product samples obtained from the company tested positive for melamine. The melamine content in its infant formula products tested as high as 2,564mg/kg, which was at least 1,000 times more than the acceptable limit.39 Melamine was also found in 21 other brands (including top brands Mengniu, Yili, Saint and Yashili), whose contamination levels were between 0.09 and 619mg/kg. The exemption status for these dairy companies and Sanlu’s “famous Chinese brand” title were revoked. According to AQSIQ, tests for melamine had not been run on dairy products prior to the scandal because the chemical compound was generally prohibited in food.40

Extension of Melamine Contamination

On 17 September, a third baby died due to consumption of melamine-laced milk products. Over 6,200 children had been diagnosed with urinary problems, and more than 1,300, mostly newborns, were hospitalised, with 158 found to be suffering from acute kidney failure. The rising number of cases had a snowball effect on the inspection scale of AQSIQ, which extended the melamine test to over 400 liquid-milk producers. On 19 September, the MoH declared that most of the liquid milk products were safe to drink. The liquid milk products of internationally renowned brands such as Nestlé were generally unaffected, but some domestically well-known local brands again tested positive for melamine, including Mengniu, Yili and Bright Dairy.41 Share prices of listed dairies dropped sharply due to the scandal, and Mengniu’s trading on the Hong Kong Stock Exchange was suspended.

By 22 September, 53,000 children had been diagnosed as ill and four had died. The head of AQSIQ was compelled to step down after the State Council held him responsible for negligence in supervision. Melamine was further detected in candies, biscuits, frozen yogurt desserts, ice cream, chocolate bars and milk tea powder made from dairy ingredients originating in China. Over 7,000 tons of these tainted products were removed from retail outlets across China. Yili also recalled all its dairy products in Hong Kong, while Mengniu

39 According to the US Food and Drug Association (“FDA”), melamine content in food below 2.5mg/kg did not normally raise health concerns. Although the FDA had yet to establish any level of melamine in infant formula that posed a risk to public health, it had established for melamine a tolerable daily intake of 0.63mg/kg of body weight per day. The European Food Safety Authority had prescribed stricter safety limits at 0.5mg/kg of body weight per day. Compared to adults, small children were at higher risk because they consumed large amounts of milk and dairy products on a daily basis. Babies were especially vulnerable when they lived exclusively on powdered milk formula.
41 The tests showed that 10% of samples of liquid milk from Mengniu and Yili registered melamine levels of 0.8 to 7mg/kg and 0.7 to 8.4mg/kg, respectively, whereas results of tests on products from Bright Dairy contained melamine quantities of 0.6 to 8.6mg/kg. See: Xinhuanet (18 September 2008) “Most Liquid Milk in China does Not Contain Melamine”, http://news.xinhuanet.com/english/2008-09/19/content_10076616.htm (accessed 28 November 2008).
issued a blanket recall of all its products. Although the MoH had confirmed earlier that no Sanlu products had been exported, the WHO warned of possible smuggling of melamine-laced infant formula across and beyond Chinese borders. Many countries started testing imported Chinese dairy products or pulling them from shelves. Some countries, such as Indonesia, Vietnam and countries in Europe, even banned food containing Chinese milk. To address safety concerns, British confectionery group Cadbury issued a global recall of all 11 of its Beijing-made chocolate products, and US coffee giant Starbucks stopped serving milk in its Chinese outlets.

**Past Instances of Melamine Contamination in China**

Melamine contamination in Chinese food products was first discovered in early 2007 when the chemical was found in pet food sold in North America, Europe and South Africa, causing death and kidney damage of thousands of dogs and cats in these regions. The pet food companies had used imported vegetable protein containing melamine from China—but the ingredients were labelled as wheat gluten and rice protein—in their products. Consequently, a wide recall of pet food in affected countries was issued in March 2007. After the scandal, China banned melamine use in vegetable protein or as an additive in feed for livestock. Nevertheless, Chinese chemical companies were still found to be selling melamine scrap to companies producing feed for livestock and even to companies manufacturing food for human consumption. Interviews conducted by some Chinese reporters with local dairy farmers in Hebei revealed that adding melamine or other protein-boosting chemicals to milk had been an open secret in the dairy industry for years, even after the pet-food scandal erupted. Some people also suspected milk produced by cows who consumed melamine could also contain melamine, as melamine-laced animal feed was discovered to be a source of contamination found in baby formula produced in South Africa.42

**Melamine Doubts**

**Combined Toxicity of Melamine and Cyanuric Acid**

According to WHO scientists, melamine by itself had low acute toxicity. However, when it was mixed with its structural analogues, such as cyanuric acid,43 it might cause the formation of melamine cyanurate crystals in kidneys.44 The source of cyanuric acid in the 2007 pet-food event had been found to be presented as a contaminant of the melamine added to wheat gluten used in making pet food. The Chinese authorities had yet to confirm the level of cyanuric acid in tainted Chinese milk powder, but they suspected the presence of cyanuric acid was a potential impurity of melamine added to milk powder.

**Ignorant or Deliberate?**

Scientists had found that melamine was slightly soluble in water, but it would often be dissolved in formaldehyde (a carcinogenic chemical used for making plastics) or in other organic solvents before being mixed into raw milk. Experts raised doubts that the generally low-educated dairy farmers, who were blamed for the milk scandal, could have known such

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43 According to the WHO report, cyanuric acid alone was also of low acute toxicity. More than 98% of an orally administered dose of cyanuric acid intake by a human could be eliminated unchanged in urine within 24 hours. No human data could be found on the oral toxicity of melamine. See: WHO (30 October 2008) “Melamine and Cyanuric Acid. Toxicity, Preliminary Risk Assessment and Guidance on Levels in Food”, http://www.who.int/foodsafety/fs_management/Melamine.pdf (accessed 5 December 2008).
complicated chemical compound techniques\(^45\) without the help of melamine sellers or milk dealers. Some people also suspected manufacturers of milk powder themselves of committing the milk adulteration.

However, because pure melamine, or so-called “protein essence”, was not cheap in China,\(^46\) other Chinese reports suggested that dairy manufacturers might not have added melamine to their products intentionally. Manufacturers of milk powder might have used low-quality soy-protein powder to lower production costs, and these protein substitutes may have been illegally tainted with cheap and impure melamine scrap. Melamine scrap could have been ground into powder form and mixed into the protein substitutes by the protein sellers, if not the manufacturers themselves. As the biggest contributor to the milk crisis, how Sanlu was implicated in the scandal became the target of media attention.

### The Probe into the Sanlu Crisis

#### Early Complaints without Repercussions

According to the Chinese State Council’s investigation, Sanlu received the first complaint about its melamine-laced milk power as far back as December 2007. The first documented exposure of Sanlu’s problematic powder was posted on a popular internet community, Tianya.cn, by a consumer named Wang Yuanping. Wang was a low-income office clerk in a less-developed Taishun county that had an average annual wage income of US$422 per capita.\(^47\) At the end of 2007, Wang’s 13-year-old daughter told him that she had urination problems after consuming Sanlu milk powder, which Wang had bought from a local supermarket in November 2007. When examining the products, he discovered to his surprise that the manufacturing date printed on the packages was post-dated 19 December 2007.

Worried about having bought fake milk products, Wang called Sanlu’s customer-service hotline to inquire. As advised, Wang returned two of the 15 packages of milk powder he had bought to Sanlu’s Shijiazhuang headquarters on 25 February 2008. A few days later, Sanlu confirmed the products had been manufactured by the company, and its regional sales representative instructed Wang to get a refund or an exchange for other Sanlu products. To be assured of the product quality, Wang insisted on reading the product test report from Sanlu. The representative said that the report was confidential, but agreed to show him later.

Because the report was never received, Wang approached a local consumer association to request that they conduct a test on Sanlu milk powder. After being told that the test would cost him over US$1,400, he hesitated. He then wrote an email directly to Sanlu to ask again for the test report, but the email was ignored until Wang took further action. He decided to ask the consumer association to carry out the test. However, the association informed him that the product he had previously bought was no longer available in the supermarket, and that the packaging of Sanlu’s products had been changed. Frustrated, Wang posted his experience on the internet on 21 May 2008. A Sanlu regional manager dropped by Wang’s house 10 days later.

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\(^46\) Being the world’s largest producer of melamine, the price for melamine scrap in China was often very low. Before 2005 it was given away almost for free. Although the price rose after 2005, it sold for only US$103 to US$117 per ton. However, when it was packaged and sold on the market as “protein essence”, its price could reach as high as US$587 per ton. See: Epoch Times (8 October 2008) “Milk Poison could Come from Melamine Scrap”, http://en.epochtimes.com/n2/china/melamine-china-milk-powder-5370.html (accessed 6 December 2008).

later to ask for the return of the remaining milk powder purchased by him. The manager also offered him four cartons of Sanlu milk powder (worth US$362) for free on the condition that he deleted all his previous internet postings derogating Sanlu’s product quality. Having accepted the goods, Wang signed a written agreement and erased all his postings the same day.

Most of the other Sanlu milk contamination cases were found in Hebei, Jiangsu and Gansu provinces. About three months before the milk scandal leaked in September 2008, a local newspaper in Jiangsu had reported a rising number of babies diagnosed with kidney disease over the previous two months. Around the same period of time, the health department in Gansu also received a report from a local hospital in mid-July indicating a surge in cases of kidney ailments among babies, stating that most of the affected had been drinking Sanlu’s infant formula. The health department notified the MoH about the phenomena and investigators were sent to Gansu by the MoH in early August, but the results were not confirmed until early September.

Request for Local Government Help and Attempt to Buy Out Critics

Meanwhile, the number of sick babies kept rising across the country. Sanlu finally reported the case to the local government of Shijiazhuang on 2 August 2008. The company requested help from local officials in managing the media and creating a good environment for the product recall in order to mitigate resulting negativity. Fonterra claimed to have learnt of the situation on the same day. Before alerting the higher authorities, Sanlu had attempted to buy out critics by bribing operators of major internet search engines. A popular Chinese website, Baidu, was offered US$400,000 by Sanlu’s Beijing-based public-relations agency to censor negative information. However, Baidu rejected the offer.

New Zealand Government and China’s Higher Authorities Notified by Fonterra

On 5 September 2008, after failing to prod Sanlu into issuing a public recall (the Chinese board members had overruled the Fonterra representatives’ suggestion of going public), Fonterra alerted the New Zealand government. Three days later, New Zealand’s prime minister, Helen Clark, contacted China’s central government directly to inform them about the milk crisis. As this news began to circulate throughout China, Sanlu’s Shijiazhuang officials finally reported the event to the higher authorities on 9 September. Sanlu and the city government were found to have violated state rules requiring organisations and government agencies to report major incidents and emergency situations involving food safety to their superiors at a higher level of government within two hours. Despite Sanlu’s public apology on 15 September, the company did not explain the delay in notifying the public and the concerned government authorities.

The Truth and Court Trials

By 18 September 2008, Shijiazhuang police had checked 41 dairy farms and milk stations in Hebei that were suspected of having added melamine to raw milk. The police summoned 87 suspects for interrogation and detained 28 of them. The police also arrested 12 milk-station managers and 75 suspected employees and suppliers.

workers and six illegal sellers of melamine, seizing more than 300kg of the substance. The suspects admitted that some stations had adulterated milk with melamine as early as 2005. Two of those arrested were brothers who ran a private milk station and had signed a supply contract with Sanlu in May 2004. They confessed that they supplied three tons of the adulterated milk to Sanlu on a daily basis. When asked if they knew the consequences of their actions, one of the brothers said he had never asked but only knew that it was bad for health, and that his family never drank the tainted milk. Another suspect confessed that, between February and July 2007, he resold 200 bags of melamine powder weighing 20kg at a price of US$31 each to milk dealerships, earning around US$2 for each bag.\(^{52}\)

A producer of fake protein powder, Zhang Yujun, was indicted for operating an illegal workshop in Shandong province from which he had tried several methods to invent fake protein that could increase the protein readings of milk. Between October 2007 and August 2008, he had made and sold 600 tons of fake protein powder containing melamine to milk dealers across China. The 600 tons of fake protein—worth around US$994,700—was the single largest source of melamine in the milk scandal. The state investigators did not recover records of melamine purchases at Sanlu, and found no evidence to suggest the company had actually added the chemical to its formula during production.\(^{53}\)

Many of the dairy farmers in Hebei had no contractual agreements with dairy companies. Rather, they sold their milk to milk dealers at milk-collection stations, some of whose corporate supervision was practically nonexistent. Some were not even officially registered with the government.\(^{54}\) It was also reported that buyers from Mengniu and Yili had approached milk dealers in Hebei and offered higher prices than Sanlu’s offer. However, they eventually rejected most of the milk because it failed their quality tests. The milk was then sold to Sanlu.

**Arrest of Corporate Culprits and Timeline of the Scandal**

The 66-year-old Tian, who had won praises for building Sanlu from the ground up, was dismissed as the company’s president and general manager as a result of the milk scandal. She was also stripped of her official and functional posts within the Chinese Communist Party. She was detained on 26 September 2008, along with three other top executives of Sanlu: the vice-president, Wang Yuliang; the general manager, Hang Zhiqi; and the director of Sanlu’s milk resource department, Wu Jusheng. In the end, a total of 21 defendants implicated in the milk scandal were tried by the Shijiazhuang court between 26 December and 31 December 2008.\(^{56}\) They included the four former top executives of Sanlu and 17 others who were accused of producing fake protein containing melamine, adding the fake protein to milk, or selling the tampered milk to Sanlu or other dairies. Of these defendants, 11 were charged with producing and selling fake and substandard produce. The rest were charged with endangering public securities by dangerous


means [see Exhibit 4]. The Sanlu trials also unveiled the company’s responses to early complaints, detailed below.57

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Late 2007</strong></td>
<td>Sanlu received consumer complaints about its infant formula powder.</td>
</tr>
<tr>
<td><strong>17 May 2008</strong></td>
<td>Sanlu’s customer service department reported the consumer complaints to Sanlu’s top management, including president Tian and vice-president Wang.</td>
</tr>
<tr>
<td><strong>20 May 2008</strong></td>
<td>An investigative team was formed in Sanlu, headed by Wang. Sanlu found excessive nitrogen in its infant formula (six times higher than in other formula brands). The company suspected melamine contamination.</td>
</tr>
<tr>
<td><strong>24 July 2008</strong></td>
<td>Sanlu sent 16 batches of infant formula to the Technical Centre of Hebei’s Inspection and Quarantine Bureau for tests.</td>
</tr>
<tr>
<td><strong>31 July 2008</strong></td>
<td>The bureau confirmed that 15 batches contained melamine.</td>
</tr>
<tr>
<td><strong>2 August 2008</strong></td>
<td>Sanlu’s management met with senior Shijiazhuang city officials, including the deputy mayor, Zhao Xinzhao. Wang proposed a recall of Sanlu milk products, but was rejected by the government officials. They came to a decision that any actions would only be taken after the Beijing Olympics (which was scheduled for 8–24 August 2008) was over. The local officials also suggested covering the issue up while pacifying victims with compensation.</td>
</tr>
<tr>
<td><strong>13 August 2008</strong></td>
<td>Sanlu completed the test of its products in storage. Tian and Wang decided to continue selling products with melamine levels less than 10mg/kg, while holding back products with higher readings. Sanlu also started to withdraw problematic products already on the market by replacing high-level melamine products with products that had lower melamine readings of around 20mg/kg.</td>
</tr>
<tr>
<td><strong>12 September 2008</strong></td>
<td>The central government stepped in and ordered Sanlu to stop all its production lines and sales. The scandal was exposed. Between 2 August and 12 September 2008, Sanlu had produced 904 tons of melamine-laced infant milk powder and sold 813 tons of tainted milk and dairy products, making about US$6.9 million.58</td>
</tr>
</tbody>
</table>

Table 1: Sanlu’s Responses to Complaints

The scandal also brought down several government officials, including the Communist Party secretary of Shijiazhuang, Wu Xiaoguo, Shijiazhuang mayor Ji Chuntang, vice-mayor in charge of food and agriculture Zhang Fawang, and AQSIQ director Li Changjiang. They were removed from office for helping to cover up the scandal and failing to fulfil their inspection responsibilities.

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Public Response and Impairment of Sanlu

As of the beginning of January 2009, the number of sick children had reached 300,000, and at least six children had died in China. The Sanlu incident and the subsequent revelation of widening contamination cases sparked worldwide outrage towards Chinese dairies and frustration over Chinese food safety. The anger of distraught Chinese parents and the general public was reflected outside the headquarters of Sanlu in Shijiazhuang. Hackers infiltrated the company’s website, changing the company name to “The Melamine Group”, and “Melamine” was added as one of the products sold on its website. A variety of online parodies related to Sanlu [see Exhibit 5] and other unscrupulous dairy companies were also created and circulated among internet users venting their resentment of Chinese dairies. Sanlu’s television advertisements also became the target of parodies. Celebrities who had endorsed Sanlu products were severely criticised for unethically promoting poisonous milk for money.

More than 90 lawyers and activists campaigned to help victims’ families sue dairies and officials who had failed to disclose the problem earlier. However, many lawyers were reportedly facing pressure from central authorities, who asked them to place the cases on hold before the central government came out with a unified solution to deal with the compensation lawsuits. Some local government officials also persuaded the parents and lawyers to resolve the case through out-of-court compensation payments.59

Fonterra’s Write-Off of Investment in Sanlu

Less than two weeks after the Sanlu scandal broke, Sanlu’s joint-venture partner, Fonterra, announced the company had lost US$77.8 million over the milk scandal.60 The global dairy exporter also had to recall a batch of its Annum Materna milk powder, which had been made by Sanlu. Further news broke in November that Fonterra would write off its entire investment in Sanlu as its association with the Chinese dairy had led to a serious setback for Fonterra’s offshore growth strategy. Although Fonterra had catapulted itself into philanthropy by giving US$8.4 million to improve children’s health in China, it continued to suffer damage to its reputation through its connection with Sanlu. Its chief executive, Andrew Ferrier, commented through the media that “the Sanlu brand cannot be reconstructed [...] Sanlu has been damaged very badly”.61

Sanlu’s Debts and Fate of Bankruptcy

By October 2008, Sanlu had recalled and destroyed more than 10,000 tons of its tainted milk powder, and it was expected to pay an estimated compensation of up to US$102.3 million to its sales agents for refunds. While on the verge of bankruptcy, some companies such as Sanyuan, a dairy, and Wahaha, a leading beverage producer in China, had reportedly offered to take over Sanlu’s core production facilities in major milk-producing regions. News also emerged in November that Sanlu would pay the medical fees for children sickened by its products and would compensate victims.62 With the help of the Shijiazhuang government, a

60 The US$77.8 million was an impairment charge against the carrying value of its 43% stake in Sanlu, reflecting the cost of the product recall and Fonterra’s anticipated loss of the Sanlu brand. See: NewstalkZB (24 September 2008) “Fonterra Estimated to have Lost $139m in Value”, http://www.newstalkzb.co.nz/newsdetail1.asp?storyID=145056 (accessed 5 December 2008).
62 In November 2008, Sanlu and 21 other dairy companies sent letters to the victims, offering US$29,222 to families whose children had died, US$4383 for serious illness (eg, kidney stones and kidney failure), and US$292 for less-severe cases. Parents of victims could seek retribution through lawsuits if they rejected the one-time compensation. A fund was also set up by the dairy producers for the sickened children to cover their medical expenses until they reached 18 years of age. See:
total of US$132 million was borrowed by the group to pay the affected consumers. On 24 December, the group declared bankruptcy, with a net debt of US$160 million.

**Loss of Market Confidence**

Despite the emergency measures and preventive schemes promptly enacted by the central government to contain the milk crisis [see Appendix 1], Chinese consumers had lost their trust in dairy products made in China. Since the contamination news erupted, sales of dairy products had dropped sharply by 30% to 40% compared to the same period in the previous year. A financial loss of at least US$2.8 billion was estimated by the Chinese Dairy Association. However, the import of foreign milk and dairy products was escalating, and the demand for wet nurses suddenly increased, reviving the popularity of this traditional job.

On 9 October 2008, the Chinese government confirmed that its test results showed all milk powder and liquid milk products manufactured after 14 September were free from contamination.\(^6\) The Ministry of Agriculture also indicated that the rate of raw-milk dumping by dairy farmers amid the milk scandal had decreased from 23.6% on 22 September to 4.6% on 1 October.\(^6\) The Chinese Dairy Association predicted that consumer confidence in Chinese dairy products would take at least a year or two to be fully restored. Then, in early February 2009, just when it was thought the milk scandal had been brought to a close, Mengniu was found to have been using illegal chemical additives in one of its product lines since 2005.\(^6\) On the bumpy road to recovery, the milk crisis [see Appendix 2 for the crisis timeline] had left Chinese regulators, dairy corporations and society at large to ponder several issues: the deeper causes of the crisis, the pros and cons of outsourcing, business ethics in the dairy business, Sanlu’s crisis-management activities, possible ways to restore consumer confidence in dairy products made in China, and the implications for foreign investors doing business in China.

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\(^6\) Osteoblast milk protein (“OMP”) was detected in Mengniu’s Milk Deluxe product line. In 2 March 2009, a senior Chinese health officer told the media that OMP, which had yet to be listed as a legal food material under current food-safety law, had tested safe. According AQSIQ, Mengniu should have submitted a document to the Ministry of Health before using the additives and let the authority decide its safety. See: Xinhua (2 March 2009) “Health Official Says Mengniu Milk Additive OMP Safe but Not Legal”, http://www.shanghaidaily.com/sp/article/2009/200903/20090302/article_392804.htm (accessed 9 March 2009).
### EXHIBIT 1: CHINA’S DAIRY PRODUCTION

<table>
<thead>
<tr>
<th>Year</th>
<th>Dairy products (million tons)</th>
<th>Increment Percentage</th>
<th>Milk products (million tons)</th>
<th>Increment Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>7,358</td>
<td></td>
<td>6,294</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>6,811</td>
<td>-7</td>
<td>6,011</td>
<td>-4</td>
</tr>
<tr>
<td>1998</td>
<td>7,454</td>
<td>9</td>
<td>6,629</td>
<td>10</td>
</tr>
<tr>
<td>1999</td>
<td>8,069</td>
<td>8</td>
<td>7,176</td>
<td>8</td>
</tr>
<tr>
<td>2000</td>
<td>9,191</td>
<td>14</td>
<td>8,274</td>
<td>15</td>
</tr>
<tr>
<td>2001</td>
<td>11,229</td>
<td>22</td>
<td>10,255</td>
<td>24</td>
</tr>
<tr>
<td>2002</td>
<td>14,004</td>
<td>25</td>
<td>12,998</td>
<td>27</td>
</tr>
<tr>
<td>2003</td>
<td>18,486</td>
<td>32</td>
<td>17,463</td>
<td>34</td>
</tr>
<tr>
<td>2004</td>
<td>23,684</td>
<td>28</td>
<td>22,606</td>
<td>29</td>
</tr>
<tr>
<td>2005</td>
<td>28,648</td>
<td>21</td>
<td>27,534</td>
<td>22</td>
</tr>
<tr>
<td>2006</td>
<td>33,025</td>
<td>15</td>
<td>31,934</td>
<td>16</td>
</tr>
<tr>
<td>2007</td>
<td>36,334</td>
<td>10</td>
<td>35,254</td>
<td>10</td>
</tr>
</tbody>
</table>


### EXHIBIT 2: CHINA’S PER CAPITA CONSUMPTION OF MILK

<table>
<thead>
<tr>
<th>Year</th>
<th>Milk (kilograms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>1.2</td>
</tr>
<tr>
<td>1985</td>
<td>2.4</td>
</tr>
<tr>
<td>1990</td>
<td>3.7</td>
</tr>
<tr>
<td>1995</td>
<td>4.6</td>
</tr>
<tr>
<td>2000</td>
<td>6.6</td>
</tr>
<tr>
<td>2005</td>
<td>21.1</td>
</tr>
<tr>
<td>2006</td>
<td>24.4</td>
</tr>
<tr>
<td>2007</td>
<td>26.7</td>
</tr>
</tbody>
</table>

EXHIBIT 3: CHINESE PROVINCES AND CITIES
EXHIBIT 4: PENALTIES FOR KEY CONVICTS IN THE SANLU COURT TRIAL  
22 JANUARY 2009

<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Job</th>
<th>Charges</th>
<th>Penalties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tian Wenhua</td>
<td>Sanlu’s president and general manager</td>
<td>Producing and selling fake and substandard produce</td>
<td>Life sentence and a fine of US$2.9 million</td>
</tr>
<tr>
<td>Wang Yuliang</td>
<td>Sanlu’s vice-president</td>
<td>Producing and selling fake and substandard produce</td>
<td>15-year imprisonment</td>
</tr>
<tr>
<td>Hang Zhiqi</td>
<td>Sanlu’s general manager</td>
<td>Producing and selling fake and substandard produce</td>
<td>8-year imprisonment</td>
</tr>
<tr>
<td>Wu Jusheng</td>
<td>Director of Sanlu’s milk resource department</td>
<td>Producing and selling fake and substandard produce</td>
<td>5-year imprisonment</td>
</tr>
<tr>
<td>Zhang Yujun</td>
<td>Producer and seller of fake protein powder containing melamine</td>
<td>Endangering public securities by dangerous means</td>
<td>Death penalty</td>
</tr>
<tr>
<td>Gao Junjie</td>
<td>Milk dealers for dairy farms and milk stations</td>
<td>Endangering public securities by dangerous means</td>
<td>Death Penalty</td>
</tr>
<tr>
<td>Zhang Yanzhang</td>
<td>Sales distributor of fake protein powder containing melamine</td>
<td>Endangering public securities by dangerous means</td>
<td>Life imprisonment</td>
</tr>
<tr>
<td>Xie Jianzhong</td>
<td>Sales distributor of fake protein powder containing melamine</td>
<td>Endangering public securities by dangerous means</td>
<td>Life imprisonment</td>
</tr>
<tr>
<td>Zhang Yanjun</td>
<td>Sales distributor of fake protein powder containing melamine</td>
<td>Endangering public securities by dangerous means</td>
<td>15-year imprisonment</td>
</tr>
<tr>
<td>Xiao Yu</td>
<td>Sales distributor of fake protein powder containing melamine</td>
<td>Endangering public securities by dangerous means</td>
<td>5-year imprisonment</td>
</tr>
<tr>
<td>Geng Jinpin</td>
<td>Dairy farmer</td>
<td>Producing and selling toxic food</td>
<td>Death penalty</td>
</tr>
<tr>
<td>Geng Jinzhu</td>
<td>Dairy farmer</td>
<td>Producing and selling toxic food</td>
<td>8-year imprisonment and a fine of US$73,000</td>
</tr>
</tbody>
</table>

Note: Sanlu itself was fined US$7.3 million even though it had been declared bankrupt. The remaining nine of the 21 defendants would be sentenced at other courts.

EXHIBIT 5: PARODIES OF SANLU ADS

Sanlu, the choice of the stepmom

Read: I have been drinking Sanlu milk powder since little

APPENDIX 1: THE STATE’S EMERGENCY AND PREVENTIVE MEASURES

Free Medical Care
Apart from setting up panels of medical experts across the country, the State Council promised to supply free medical care to children sickened by melamine. However, children who sought medical support before 12 September 2008 were not entitled to the free medical care. Parents who had spent and often borrowed large sums to pay their children’s medical bills and whose children had died from contaminated milk prior to 12 September 2008 began filing lawsuits against the dairy companies.

Hardship Subsidies for Dairy Farmers
As China’s dairy industry came to a halt due to the scandal, more than 2 million farmers were forced to toss out fresh milk while continually bearing the costs of feed. To save on these costs, some farmers began killing their cows or selling them in the market at a very low price. In response to the situation, the Chinese Ministry of Agriculture announced an emergency plan on 4 October 2008, with the Ministry of Finance specially subsidising farmers who suffered from scarcity in milk demand due to the milk crisis. To reduce the cost of feeding cows, local governments also promised subsidies for dairy farmers. For instance, farmers in China’s northern Shanxi province were entitled to a daily subsidy of up to US$2.60 per cow in major milk-producing cities and counties.66

Setting an Acceptable Level of Melamine
On 9 October 2008, a joint statement was issued by the MoH and four other government agencies setting the limit on melamine in infant formula at 1mg/kg, and 2.5mg/kg for other dairy products, including liquid milk. Although the US Food and Drug Administration required that all infant formula sold to the US be free of melamine, a Chinese MoH official said that it was quite unlikely that melamine levels could be kept at zero because small amounts of melamine could still leak from products’ packaging, as the chemical compound was commonly used for making plastics and laminates and for other industrial applications. He continued to assure that the estimated oral uptake of melamine from these residual sources was too low to be considered harmful to human health. However, the Chinese Centre for Disease Control and Prevention stressed that any quantity beyond the permitted level would suggest an intentional act on the part of the suspects.68

Establishing Food-Testing Centres
The Chinese government planned to establish special working groups in almost every single province to regulate the dairy-product market through setting up new food-testing centres and replacing obsolete equipment. It was the aim of Chinese inspection authorities to establish nearly 400 product-testing centres between 2009 and 2010, and 80 of these would be food-testing centres.69

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68 Ibid.

### APPENDIX 2: CHINA’S MILK CRISIS TIMELINE

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late 2007</td>
<td>Sanlu received consumer complaints about its milk powder.</td>
</tr>
<tr>
<td>17 May 2008</td>
<td>Sanlu’s customer service department informed the top management, including president-cum-general manager Tian Wenhua and vice-president Wang Yuliang, about the complaints.</td>
</tr>
<tr>
<td>20 May 2008</td>
<td>Sanlu formed an investigative team and found excessive nitrogen in its infant formula, raising suspicions of melamine contamination.</td>
</tr>
<tr>
<td>24 Jul. 2008</td>
<td>Sanlu sent 16 batches of infant formula to the Technical Centre of Hebei’s Inspection and Quarantine Bureau for testing.</td>
</tr>
<tr>
<td>31 Jul. 2008</td>
<td>The bureau confirmed that 15 batches contained melamine.</td>
</tr>
<tr>
<td>2 Aug. 2008</td>
<td>Sanlu’s management met with senior officials in Shijiazhuang, where Sanlu was headquartered. They came to a decision that an official recall should be held back until the Beijing Olympics (which ran from 8–24 August 2008) was over, and suggested pacifying victims by compensating them. Sanlu’s New Zealand joint-venture partner, Fonterra, learnt about the incident.</td>
</tr>
<tr>
<td>13 Aug. 2008</td>
<td>Sanlu finished testing products in storage and decided to keep selling products with melamine readings of less than 10mg/kg, but to hold back products with higher readings. It also started withdrawing problematic products from the market by replacing products with high levels of melamine with products which had a lower melamine reading of around 20mg/kg.</td>
</tr>
<tr>
<td>5 Sept. 2008</td>
<td>Fonterra informed New Zealand’s prime minister, Helen Clark, about the issue.</td>
</tr>
<tr>
<td>8 Sept. 2008</td>
<td>Clark alerted China’s central government in Beijing about the milk crisis.</td>
</tr>
<tr>
<td>9 Sept. 2008</td>
<td>Local officials in Shijiazhuang reported the Sanlu event to higher authorities.</td>
</tr>
<tr>
<td>11 Sept. 2008</td>
<td>After conducting its own analysis, Sanlu publicly recalled 700 tons of its infant formula produced before 6 August 2008. The WHO was notified of the milk contamination in China. A team of 800 policemen was formed by Shijiazhuang’s police to launch an investigation into the matter.</td>
</tr>
<tr>
<td>12 Sept. 2008</td>
<td>The central government ordered Sanlu to stop all its production lines and sales.</td>
</tr>
<tr>
<td>13 Sept. 2008</td>
<td>China’s State Council announced that panels of medical experts would be set up immediately across the country. The state council also promised to give free medical care to melamine-stricken children who sought medical support on and after 12 September 2008 due to consumption of tainted milk.</td>
</tr>
<tr>
<td>15 Sept. 2008</td>
<td>The number of melamine-stricken children rose to over 1,200, with two deaths. Sanlu’s vice-president, Zhang Zhenling, apologised to the public, but did not explain the delay in warning the public.</td>
</tr>
<tr>
<td>16 Sept. 2008</td>
<td>AQSIQ revealed the test results of 490 batches of infant milk-powder samples from 109 brands in China, indicating that 69 batches of infant formula from 22...</td>
</tr>
</tbody>
</table>
brands were melamine-tainted.

Tian was dismissed from her posts as president and general manager of Sanlu and was also discharged from the board.

Four local officials of Shijiazhuang were dismissed, including Li Zhiguo, head of the quality-supervision bureau, Zhang Fawang, vice mayor in charge of food and agriculture, Zhang Yi, director of the food and drug administration, and Sun Renhu, head of the animal husbandry and fishery bureau.

17 Sept. 2008

More than 6,200 children were reported to have been sickened by melamine-tainted milk, and three babies had died after consuming Sanlu’s infant formula. China’s two leading dairies, Mengniu and Yili, recalled infant formula.

Shijiazhuang mayor Ji Chuntang was removed from his post.

China deployed over 5,000 inspectors to 1,548 dairy-product enterprises across the country to assure quality control for raw milk and other raw materials.

Police in Hebei province arrested 18 suspects, six of whom had allegedly sold melamine to milk dealers, and 12 of whom were milk dealers who had mixed melamine into milk before selling it to dairy companies.

18 Sept. 2008

China revoked the inspection-exemption status of food companies in China.

19 Sept. 2008

AQSIQ widened checks on liquid milk products. The MoH declared that most of the liquid milk products were safe to drink. However, liquid milk products from the three big Chinese dairies, Mengniu, Yili and Bright Dairy, tested positive for melamine.

21 Sept. 2008

The MoH reported four deaths and nearly 53,000 sickened children, with 12,892 hospitalised and 104 in acute conditions.

22 Sept. 2008

Li Changjiang, the head of AQSIQ, resigned.

Wu Xianguo, secretary of the Shijiazhuang Municipal Committee of the Communist Party of China, was dismissed.

26 Sept. 2008

Sanlu’s president and three other top executives at Sanlu were detained. They were Sanlu’s vice-president Wang, the general manager Hang Zhiqi, and the director of Sanlu’s milk resource department, Wu Jusheng.

4 Oct. 2008

The Chinese Ministry of Agriculture announced an emergency plan, with the Ministry of Finance providing special subsidies to farmers suffering from scarcity in milk demand due to the milk crisis.

9 Oct. 2008

The Chinese government confirmed that all milk powder and liquid milk products manufactured after 14 September 2008 were free of contamination.

The MoH and four other government agencies set the limit on melamine levels for infant formula at 1mg/kg, and 2.5mg/kg for other dairy products, including liquid milk.

24 Dec. 2008

Sanlu declared bankruptcy, with a net debt of US$160 million.

26 - 31 Dec. 2008

21 defendants were summoned by the Shijiazhuang court for the milk scandal trials. They included the four former top executives of Sanlu and 17 others who had been charged for producing fake protein containing melamine, adding
Sanlu’s Melamine-Tainted Milk Crisis in China

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Feb. 2009</td>
<td>OMP, a chemical additive that had yet to be listed as a legal food material under Chinese food-safety laws, was detected in Mengniu’s Milk Deluxe product line. The dairy company had been using OMP since 2005. After a government order on 2 February 2009, Mengniu stopped adding OMP to its milk, but did not recall products already on the market.</td>
</tr>
<tr>
<td>13 Feb. 2009</td>
<td>The MoH stated that OMP had tested safe for human consumption, but the ban on its use remained in place because the company had failed to obtain approval for its use from the relevant authorities prior to the launch of the milk products containing OMP.</td>
</tr>
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