

## Chinese Zinc Sulfate Contamination Review

The purpose of this paper is to briefly document examples of Chinese zinc sulfate heavy metal contamination and discuss its significance:

### Scope of the problem:

The scope of the problem is unknown but the following examples suggest it is not an isolated problem in time or geography:

**1**-European Union-has issued RASFF (Rapid Alert System for Food and Feed) alerts in animal nutrition in the years of 2000-2006 for cadmium contamination of Chinese zinc sulfate and magnesium oxide, dioxin contamination of zinc oxide, copper sulfate and zinc sulfate.

World Poultry Vol. 22 No 12, 2006 page 14 EU legislation supports innovation with control

*1a-“The RASFF (Rapid Alert System for Feed and Feed) 2007 report cites China as the leading source of notifications (355, 12% of the total), involving illegal antimicrobial residues, mycotoxins, heavy metals, dioxins/PCBs and fraudulent addition of melamine to feed ingredients.*

*“China is also a major supplier of inorganic minerals to the animal nutrition sector. In recent years Chinese inorganic minerals have been associated with serious contamination incidents in the EU, especially of heavy metals and dioxins/PCBs. In one incident involving cadmium contamination of zinc sulphate, operator deficiency in documentation, testing and traceability led to food safety measures involving 4000 farms, criminal fines and product recalls the cost of which was estimated at 10-12 million euros.”*

*Quality control: From business cost to brand value 2 Feb 2010*

<http://www.allaboutfeed.net/article-database/quality-control-from-business-cost-to-brand-value-id1467.html>

**2**-Cadmium contaminated zinc sulphate fertilizer problems in South Africa occurred when a multinational fertilizer distributor operating in the Eastern Cape of South Africa sourced low cost zinc sulfate from China. The resulting effect on crops dosed with these fertilizers was unmarketable contaminated fruit which **has damaged the perceptions of South Africa fruit globally.**

Science in Africa July 2007 Heavy Metals take global centre stage

<http://www.sicenceinafrica.co.za/2007/july/heavymetals.htm>

The income for the pineapple growers in South Africa affected the first year after contamination was **0/ha causing first year Gross Margin above variable cost of RAND -16,204.67/ha.**

The Impact of Contaminated Fertilizer on Pineapple Growers in the Eastern Cape, South Africa by Gary Hill

**3-** “In 2004 both France and Norway imported contaminated batches of zinc sulphate from China which was subsequently used as a pre-mixture ingredient in animal and fish feed for many months. This was the third time since 2000 that cadmium contaminated feed ingredients imported from China had been reported to the European Union. The Norwegian Food Safety Authority (NFSA) reported that a 20 ton shipment of zinc sulphate for use in feeds was delivered to Norway containing **5-8% cadmium**, which is about 1.5 tons of cadmium, and that it was highly uncertain how much had been distributed to animals, fish, or the environment.

The NFSA estimated that 3-5% of Norway’s annual feed production, or 75,000 to 125,000 tons, was contaminated with cadmium. Contaminated fish feed had been sent to Scotland, Canada, and the Faeroe Islands and the World Trade Organization was notified.

In the first week of October 2005, Norway sent another WTO emergency notification for elevated cadmium levels in beef and sheep products. Again this was linked to the source of contaminated zinc sulphate from China.”

Norwegian farmed salmon production raises global concern by Claudette Bethune, Ph.D. May 31, 2006. <http://environmentalchemistry.com/yogi/environmental/200605norwegiansalmon-pg2.html>

**4- “Exchange** of views on possible EU measures as regards the contamination of by cadmium of zinc sulphate originating from China and intended for animal feeding

**Zinc sulphate extremely high contaminated with cadmium originating from China has been imported into France in 2004.** Due to the late detection of the contamination in January 2006, the highly contaminated zinc sulphate was already to a certain extent incorporated in premixtures and compound feed and fed to animals.

The Commission representative presented the outline of a possible EU measures to avoid a similar contamination incident in the future. The following provisions are envisaged in the possible EU measure:

- The measure is based on Article 30 of Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules providing that requirements may be adopted as regards the circumstances in which official certification is required.
- official certification is required for zinc sulphate intended for animal feeding (and human consumption)”

“Standing Minutes of the Meeting of the Standing Committee on the Food Chain: Brussels 8-9 June 2006”

[ec.europa.eu/food/committees/regulatory/scfcah/.../summary42\\_en.pdf](http://ec.europa.eu/food/committees/regulatory/scfcah/.../summary42_en.pdf)

[www.reading.ac.uk/foodlaw/pdf/eu-06012-draft-zinc-sulphate-china.doc](http://www.reading.ac.uk/foodlaw/pdf/eu-06012-draft-zinc-sulphate-china.doc)

5-“In February 2000, a private fertilizer company in Washington State that distributed zinc fertilizers in the Western U.S. and Canada called the Washington State Departments of Agriculture and Ecology. The company informed state officials that it had retested its product for metals and discovered some of the product had high cadmium levels, higher than what is allowed by state standards. The fertilizer company had tested its products for metals when it registered them for sales in Washington in July 1999, but at that time these products met metal standards. Since that time the company changed where it purchased the raw material for their product.) Once the company discovered the high cadmium concentrations, they closed their facility and issued a stop sale and recall for their fertilizer products made from the contaminated material. **Company operations were closed for several months for facility clean up. Some of the raw material tested as high as 20 percent cadmium (200,000 ppm).** Since cadmium does not occur at these concentrations in natural ore, it is assumed that the cadmium was added to the zinc sulfate.”

One fertilizer company that uses a zinc sulfate raw material from China tests each load of raw materials in China prior to shipment to the U.S.”

Imported Cadmium-Contaminated Zinc Sulfate Used in Fertilizer and Other Products  
Washington State Department of Ecology. July 2000 document number 00-04-025

<http://www.ecy.wa.gov/biblio/0004025.html>

6-DTN News November 26, 2008

“Fertilizer Industry Officials warned their member this week about the increased chance that imported Chinese zinc fertilizer could contain high levels of cadmium.”

“A memo sent by officials of the Fertilizer Institute told fertilizer manufactures, importers, and distributors that a U.S. Department of Agriculture researcher warned that zinc fertilizers containing high amounts of cadmium have been appearing in other countries. **The USDA warning said the levels recorded in other countries suggest that hazardous heavy metals may have been purposefully dumped into fertilizers as a way to dispose of them.**”

“The point of our communication to members is to protect not only the industry but the folks who buy our products,” said Bill Herz, vice president of scientific programs for TFI, in an interview with DTN. “We always recommend that (members) look at state and federal regulations and do some spot testing (of their own) for heavy metals.”

The warning comes on the heels of other countries finding contaminated zinc fertilizers in shipments, and from crop contamination following the application of contaminated fertilizers.

“**Countries were calling us to learn how to remediate their contaminated soils,**” said Rufus Chaney, senior research agronomist with the USDA’s ARS.

“When I learn how that contamination occurred, from Chinese zinc sulfate with extremely high levels of Cadmium, I wanted the fertilizer industry to be aware to be looking out for it.” Chaney told DTN from his office in Beltsville, Md.”

“The limit for cadmium was set at 1.4 parts per million for each 1 percent zinc the fertilizer contained, or a cadmium-to-zinc ratio of 0.00014, according to the Federal Register. “The ratio in these Chinese shipments we learned about was 0.5, “Chaney said. “That kind of level is no accident. The only way to get that much cadmium in there is to purposefully dump it to get rid of the hazardous waste.” “Chaney said those shipments were certified by the seller as meeting legal heavy metal content, but testing proved otherwise.”

DTN News by Greg D. Horstmeier, DTN Production Editor Wednesday Nov. 26, 2008.

[http://www.dtnprogressivefarmer.com/dtnag/common/link.do;jsessionid=9FE1EAF5E53A4D55BB4BED90669F2987.agfreejvm2?symbolicName=/free/news/template2&forceNavUpdate=false&topic=DTN/Ag&vendorReference=80c2382b-6a07-4a40-8684-144af1f6edba\\_\\_1225986673189](http://www.dtnprogressivefarmer.com/dtnag/common/link.do;jsessionid=9FE1EAF5E53A4D55BB4BED90669F2987.agfreejvm2?symbolicName=/free/news/template2&forceNavUpdate=false&topic=DTN/Ag&vendorReference=80c2382b-6a07-4a40-8684-144af1f6edba__1225986673189)

7-China closes factory after cadmium pollution protest Reported by Yu Le and James Pomfret Aug 3 2009

Two villagers near the Xianghe Chemical Factory, which had produced zinc sulfate for six years, died in May and June. Autopsies found high levels of cadmium in their bodies. Tests conducted after their deaths found that over 500 out of nearly 3,000 local residents also had elevated levels of cadmium in their urine. Around 30 people were admitted to hospital after checkups. **The illegal extraction of non-ferrous metals in the region has increased in recent years due to corruption, and hundreds of extraction plants are now discharging untreated chemical-laced sewage into the river.**

<http://www.reuters.com/article/2009/08/03/us-china-protest-pollution-idUSTRE57216H20090803>

8- Is China the only country producing contaminated zinc sulfate?

No-The Soil Resources Development Institute in Bangladesh identified zinc sulfate with 40,258 ppm cadmium and 31,292 ppm lead. This amount is alarmingly high as allowable levels of cadmium and lead is only 10 ppm and 100 ppm respectively.

In laboratory tests of 658 samples conducted during July 2009 and May 2010, SRDI found 72 percent of available zinc sulphate adulterated, which means those either lack required zinc or are contaminated with heavy metals. **In 234 samples, SRDI found 42 percent of locally manufactured zinc sulphate contaminated with cadmium and lead, while the percentage was 3 in imported ones.**

Toxic chemicals found in fertilizer. By Porimol Palma Saturday, August 21, 2010.

<http://www.thedailystar.net/newDesign/news-details.php?nid=151601>

## Summary

The problem is widespread in time and geography.

The concentration of Cadmium in contaminated product indicates purposeful dumping of hazardous waste not just slightly higher cadmium concentration than regulations allow. Concentrations in some of these cases indicate acute poisoning hazards not chronic hazards and have required the plant to be shut down for cleanup.

Some Chinese zinc sulfate companies have shown a disregard for human health and safety even among their neighbors in China

Shipments certified by the seller as being within regulation have proven to have excessive heavy metal content.

Contamination has caused growers a full year of total crop loss in South Africa.

The importer was sued by the growers not the Chinese manufacturer.