

Officials Warn of Tainted Fertilizer

Imported Chinese Zinc Fertilizers May Contain High Levels of Cadmium



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COLUMBIA, Mo. (DTN) -- Fertilizer industry officials warned their members this week about the increased chance that imported Chinese zinc fertilizers could contain high levels of cadmium.

A memo sent by officials of The Fertilizer Institute told fertilizer manufacturers, 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 Agricultural Research Service. Chaney has been involved in studying heavy metal contamination in soils, and developing remediation methods, for four decades. He notified TFI and state fertilizer testing agencies this week about the potential contaminated products.

"When I learned 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.

In 2002, the U.S. Environmental Protection Agency created more stringent rules around heavy metals such as cadmium, lead, chromium and arsenic after high levels of those metals were found in a U.S. industrial waste product, KO61, then used to create zinc oxysulfate. Zinc oxysulfate had become a low-cost zinc fertilizer product that was used in a large portion of corn and other crops needing zinc. 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.

TFI officials declined to speculate on the nature of the contamination. "We purposefully put the memo together to not point fingers at imported product, and to be sensitive to the many different sectors of the industry," said Kathy Mathers, TFI spokesperson.

"The response (from membership) has been pretty quiet," Mathers said. "We see that as a good sign." She and Herz said TFI is considering additional educational programs for membership. Herz said the subject of contamination will likely be discussed at the February meeting of the Association of American Plant Food Control Officials, which represents U.S. fertilizer regulators.

In South Africa, applications of contaminated zinc on the soil led to pineapples that had unsafe levels of cadmium, according to the online science magazine Science in Africa. Other contamination issues have occurred in Australia, Kenya, France, Belgium and Germany, according to Chaney.

Contaminated Chinese zinc has made it to U.S. shores in the past. Chaney said in July 2002 a supply of zinc fertilizer with high cadmium content was discovered by testing labs in several West Coast states and Canadian providences. Those products were found before they were sold for application. The remaining issue, Herz said, was that the fertilizer buyer involved had to arrange for the contaminated shipment to be disposed of. "We're trying to avoid those kinds of situations," Herz said.

Since the KO61 issues arose in the late 1990s, state fertilizer regulators routinely spot check zinc and other fertilizers for heavy metal content. Chaney said this week's announcement will likely increase the intensity of that testing, and fertilizer examiners will be asking fertilizer suppliers more questions about where their products originated.

Crops of main concern in the U.S. are corn and rice, both of which often acquire annual zinc fertilizer applications.

TFI officials did not have estimates on the amount of Chinese zinc imported into the U.S. Fertilizer companies contacted by DTN put the total agronomic use of zinc at 100,000 to 120,000 short tons per year, with 20 to 30 percent of that from Chinese imports.

According to health journals, cadmium collects in the human body, particularly in the kidneys, and can cause long-term kidney damage. It also affects how calcium collects in the body, leading to bone deformities.

Zinc also is often applied to pastures, potentially contaminating livestock. "That has happened in Europe, the only good thing is that cadmium only collects in the kidneys and liver, not in meat," Chaney said. Slaughter houses handling those animals had to make sure the liver and kidneys did not make it into the food supply.

The raw ore mined for zinc, manganese and other micronutrients often naturally contain cadmium, lead and other heavy metals. Those metals typically are removed during a refining process, particularly for micronutrients aimed for food and feed uses. This leaves a waste stream of heavy metals that must be disposed of in some fashion.

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