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## **Demand for Zinc as Micronutrient in Agriculture Grows as Global Population to Exceed 9 Billion by 2050, Food Consumption to Increase 70 percent**

**Zinc key to increasing crop yields for agricultural use, as well as in automotive tire production, and paints, coatings, glass and construction materials**

HOUSTON, TEXAS – Improving diets worldwide and the need to feed the more than 9 billion people who are expected to inhabit the earth by 2050 are driving greater global demand for zinc chemicals to use as micronutrients in agricultural crops. This holds especially true for chemicals such as zinc oxide, zinc sulfate and zinc chloride, according to a new global market research report released by IHS (NYSE: IHS), the leading global source of critical information and insight.

**"severe acute malnutrition affects an estimated 19 million children under the age of five worldwide and accounts for approximately 400,000 child deaths each year."**

"Zinc is an essential element for animal and plant life, and zinc deficiency, particularly in children, has become such a threat to public health that many countries in zinc-deficient regions are implementing programs to increase the use of zinc in fertilizers," said Stefan Schlag, director of specialty chemicals at IHS Chemical. "We see this trend contributing to healthy demand growth for zinc chemicals during the next few years."

"Total demand for zinc-derived chemicals is currently 1.5 million metric tons (MMT) (expressed as Zn equivalents)," Stefan said. "However, by 2018, the end of the study period, we expect demand for these chemicals to exceed 1.8 MMT Zn. About 400 thousand metric tons (TMT) of that demand will be tied to agricultural demand, most of it in the form of zinc sulfate."

In 2012 and 2013, for example, China included zinc fertilizer in the national fertilizer recommendations for major crop production, Schlag said. "This project will help bring zinc fertilizer into the mainstream of balanced fertilizer management and significantly increase zinc fertilizer production and use in China by an additional 50,000 metric tons to 100,000 metric tons annually, according to our estimates at IHS Chemical."

Schlag co-authored the IHS report, entitled the *IHS Chemical Economics Handbook: Inorganic Zinc Chemicals*. In it, he says the biggest demand growth sector for zinc chemicals during the period 2013 to 2018 will be for fertilizer production for animal feed and human food production. Agricultural applications of zinc chemicals in 2013 accounted for more than 290 TMT (Zn), with growth forecast at about 6 percent from 2013 to 2018.

Zinc deficiency is the one of the most common micronutrient deficiency problems globally, especially in cereal grain crops, which comprise the dominant food source for much of the population in developing countries. Nearly 50 percent of cultivated soils worldwide currently contain low amounts of plant-available zinc, and by 2018, said IHS, this could reach 65 percent. Plants growing in the potentially zinc-deficient soils have reduced productivity and contain very low concentrations of zinc in the edible parts.

Zinc fertilizer increased crop yields from 8% to 12% annually and increased zinc content in grains by 20% to 40%.

In many studies, including projects in Brazil, China, India and Turkey, agricultural yields were increased in zinc-deficient regions by adding zinc to standard fertilizers and premixes. According to IHS, field trials proved that zinc fertilizer application increased crop yields from 8 percent annually to 20 percent annually, which increased zinc content in grains by 20 percent to 40 percent. This development also improved the soils' nitrogen fertilizer uptake and increased economic returns for farmers.

Said Schlag, "With the amount of arable land per-person declining and population expanding, global crop-yields must increase to meet food production needs. As a result, we are seeing the most dramatic demand increase for zinc chemicals in fertilizer and agricultural production. There are additional options to address crop yields, including improvements in seed technology and improvements in crop protection. However, the greatest potential for improvement is fertilizers and micronutrients, and in particular, zinc, which is why our forecast for demand growth is so bullish on the agricultural industry."

Zinc deficiency has been identified as a means to address malnutrition in children, which the World Health Organization (WHO) and UNICEF cite as one of the world's major health concerns. According to WHO literature, "severe acute malnutrition affects an estimated 19 million children under the age of five worldwide and accounts for approximately 400,000 child deaths each year." The issue is of such significance to global development, that according to UNICEF, "the *Copenhagen Consensus*, a group of leading economists, has consistently confirmed that "taking action on under-nutrition is the single-most important, cost-effective means of advancing human well-being."

The global zinc industry, noted IHS, is rebounding and will continue to grow after being hard hit by the recent economic crisis due to its dependence on the automotive industry, which experienced a strong decline in volume. Zinc chemicals suffered the strongest in the area of rubber compounding for tires, which comprises about 20 percent of total consumption of zinc chemicals globally. Additionally, much of the rubber not consumed in the tire segment is used in other automotive applications.

However, according to IHS Automotive, automotive production numbers are expected to nearly double by 2030, as the standard of living increases in highly populated countries including China, India and Brazil. This increase in automotive volume will also drive more demand for zinc chemicals. Currently, the global rubber industry accounts for more than 54 percent of the zinc oxide market, or about 860 TMT. Of that, an estimated two-thirds of zinc oxide supply is used to produce tires, while all other rubber applications accounted for the remaining one-third. By 2018, IHS estimates the global tire and rubber industry will consume approximately 1 MMT of zinc oxide.

Global demand for zinc oxide is forecast to grow by 4% each year from 2013 to 2018.

China presently consumes nearly 42% of global zinc capacity, increasing at a rate of 6% a year.

According to IHS estimates, the world demand for zinc oxide in 2013 was 1.6 MMT, with global demand growth forecast at nearly 4 percent annually during 2013 to 2018. China is expected to continue to be the largest consumer of zinc oxide (China currently consumes nearly 42 percent of global capacity) and to have the highest demand growth rate of approximately 6 percent per year. The U.S. and Western Europe follow China in terms of consumption, each with approximately 12 percent of global demand.

Other uses for zinc chemicals are the production of chemicals, ceramics, glass, and paints and coatings. The largest manufacturers of zinc chemicals, in terms of capacity, are Votorantim (Brazil), Zinc Nacional (Mexico), Umicore (Belgium), Grillo (Germany), and Weifang Longda Zinc Industry (China)

Said Schlag, "Global zinc chemical production will soon be reaching very high utilization rates, so new capacity is needed. At IHS Chemical, we expect new capacity for zinc chemicals to come online during the next five years, most likely in Asia and in China, in particular, to satisfy the increasing demand for tire production and rubber goods, in general." The region is expected to consume an estimated 2 MMT of zinc oxide in 2018.

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<http://press.ihs.com/press-release/agriculture/demand-zinc-micronutrient-agriculture-grows-global-population-exceed-9-bil>