IZA Mission

IZA’s mission is to support and advance zinc products and markets through research, development, technology transfer and communication of the unique attributes that make zinc sustainable and “essential for life.”

The International Zinc Association (IZA) was created in 1991 by a group of leading zinc producers and is guided by the principle of actions that positively influence the image and markets for zinc.

The Association’s primary goal is to deliver value to its Members through innovative programs in its strategic focus areas of Environment and Sustainable Development, Technology and Market Development and Communications.

IZA provides a forum for zinc-industry executives to analyze and anticipate issues affecting zinc globally and to ensure a timely and appropriate response.

Using its leadership role in the world zinc industry, IZA cost effectively coordinates initiatives good for zinc—undertaken either directly or through involvement and support of customer groups and related stakeholders on the local, regional and global levels.

This publication describes IZA’s remarkable journey over the last twenty years, its key achievements and the new issues—barely visible 20 years ago—that will shape its future.

Throughout its history, IZA has remained true to its strategy of working to enhance zinc’s image, markets and contribution to sustainable development.
Continuous Galvanizing

1995
First three-year phase of the Galvanized Autobody Partnership (GAP) is launched. Involves 26 steel companies, four equipment suppliers, two auto companies and twelve zinc producers. Goal is to ensure new steels being developed for the auto industry can be galvanized.

1996
GAP has been so successful in addressing auto industry needs for galvanized high strength steels that it is on its sixth three-year cycle, making it one of IZA’s most successful and longest running programs. GAP remains funded at over 75% from the Steel and Automotive industries.

1998
IZA sponsors formation of the Light Gauge Steel Engineers Association to provide technical support needed to capture and maintain a significant share of the construction market for light gauge steel.

1999
The GalvInfo Center is created in North America to provide end users and designer/specifiers of zinc-coated sheet steel a dedicated resource for information on the manufacturing, performance, design, and application of zinc-coated sheet steel. The Center conducts an annual Hot-Dip Galvanized Sheet Production course in the U.S. and elements of the course have been given in China, Brazil, Mexico, Turkey and India. The GalvInfo knowledge base has been disseminated globally.

2011
Researchers set out to determine the life expectancy of residential steel framing. A pilot testing begins on a new in-line galvanized rebar process in China. Early results indicate this continuous process could significantly reduce the costs of production for galvanized rebar.

Steel Framing Alliance releases IZA-sponsored Life Cycle Analysis of Residential Steel Framing.

IZA’s market development program for continuously galvanized steel sheet is largely in partnership with the steel industry. Its focus has been on protecting and developing its use in automobiles and construction (roofing, facades and steel framing).

Work aimed at the automotive market is being directed by IZA’s Galvanized Autobody Partnership (GAP). Light-weight high-strength steel has become the norm in automotive body-in-white applications. Galvanized automotive applications represent the cutting edge of zinc coating technology and the GAP program is addressing the processing and performance issues required to ensure these new steels can be galvanized with a view to protecting this important market.

Within the construction sector, IZA focuses mainly on galvanized product in light steel structures. Significant work has been done and is ongoing to develop long-term corrosion durability testing, including atmospheric mapping of regions to enable prediction of product performance. IZA also partnered with the steel industry to educate and develop residential steel framing builder availability and competence and develop and disseminate zinc-coated sheet steel information through venues such as the GalvInfo Center.

Significant effort is also directed towards providing marketing support and technology transfer to regions currently showing low intensity of use.

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In general galvanizing, IZA has identified the building and construction, automotive underbody and the street and outdoor furniture sectors as offering the greatest growth opportunities. IZA works closely with regional galvanizing associations worldwide.

IZA supports targeted market development programs looking at specific markets such as galvanized steel poles as a replacement to wood or concrete electric transmission lines or the use of galvanized rebar in bridge decks.

In developing countries, technology transfer is a major area of focus. Regional surveys indicate that there is an awareness of general galvanizing, restraints to growth are often quality standards, service and price. As a result, IZAs regional general galvanizing initiatives have focused upon promoting and educating key decision makers about zinc’s advantages in corrosion protection and other applications. To ensure long-term sustainability of these markets, this education also involves training a local supplier base on modern and efficient galvanizing.

Since initial markets occur in infrastructure development, bridges and pipelines and support poles, this is typically where the outreach begins.

As with all IZA market development efforts, these programs are tailored to raise per capita consumption of zinc to developed world values.

General Galvanizing

<table>
<thead>
<tr>
<th>Year</th>
<th>Event/Program</th>
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<tr>
<td>1995</td>
<td>Galvanizing Underbody Parts for Car Program—Galvauto/IZA General Galvanizing Association: launch of IZA’s market development program in the underbody components like engine cradles, suspensions in a new car, steering, spring mountings and rear axle beams.</td>
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<td>1998</td>
<td>World General Galvanizing Congress is organized, promoting IZA general galvanizing market development efforts. IZA launches IZA-Europe and IZA Asia General Galvanizing Associations in a number of global automotive underbody programs across the EU region.</td>
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<td>1998</td>
<td>IZA sponsors a steel survey, spending a series of comparative projects with other steel organizations, notably a project with USA, Japan, galvanized underbody parts across Europe.</td>
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<td>2001</td>
<td>IZA launches new interactive performance and cost calculator. The web-based program allows users to predict the performance of a galvanized steel underbody part, based on wind, snow, and water exposure and material selection, for the first time, and improved forecasting efforts of galvanizers across Europe.</td>
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<td>2001</td>
<td>IZA launches market development program in Galvanized Rebar Funded as joint research funded by the zinc industry and Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Australia. The program works as a field trial.</td>
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<td>2004</td>
<td>IZA’s Plant Upliftment Project is underway for the World Cup 2014 and the Summer Olympics in Rio. In 2011 IZA extends the program to India, Africa and other regions.</td>
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<td>2005</td>
<td>IZA’s market development program in China resulted in galvanized rebar’s acceptance standards being developed in partnership with the Ministry of Railways, and in other railway systems in China within galvanized. A similar target was set for South Africa. Beijing is investing US $1 trillion in stimulus funding for infrastructure development. The estimated market for these new rail systems is one million tonnes of zinc. Additionally, the building and construction market in South Africa got involved early on and worked with local governments to further reduce the cost and process.</td>
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| 2010 - 2011 | IZA’s market development program in China resulted in galvanized rebar’s acceptance standards being developed in partnership with the Ministry of Railways, and in other railway systems in China within galvanized. A similar target was set for South Africa. Beijing is investing US $1 trillion in stimulus funding for infrastructure development. The estimated market for these new rail systems is one million tonnes of zinc. Additionally, the building and construction market in South Africa got involved early on and worked with local governments to further reduce the cost and process.
The comments that emerge from the market and perception surveys for the zinc die casting industry worldwide are that there are essentially two stages of development. The first represents that of the developing world (including the Far East) where the major focus is on price and where market feedback consistently identifies variable product quality as a major concern within the zinc die casting industry.

The second stage, seen in the developed world, has the industry counterering the threat from alternative materials such as engineering plastics and aluminum by either adopting new technologies (thin wall castings, high fluidity or creep resistant alloys) or the development of new markets (such as automotive under-hood components).

I2A’s market development program for die castings addresses both scenarios. The first through increasing the awareness of zinc casting alloys at the designer, specifier and engineering levels. This entails developing and disseminating essential user property data, including mechanical and finish properties and educating design and engineering students about zinc castings and their capabilities.

The second area involves the development of new alloys with improved properties to open new applications to zinc casting alloys.
IZA’s market development program for zinc energy storage is mainly an awareness effort in support of individual zinc battery and zinc fuel cell companies working on electric vehicle (EVs) and large-scale energy storage projects.

Primary zinc-carbon and alkaline batteries compete well in the standard AAA, AA, C and D-size consumer battery market. Similarly, button cell Zinc/Air and Zinc/Silver batteries are widely used in the electronics industry to power items like hearing aids, wrist watches and calculators.

Although EVs and adding substantial electricity storage to the electric grid are recognized as key elements for future energy independence and sustainability, these large energy storage opportunities have, until now, failed to realize their market potential. Nevertheless, zinc technologies are well placed for large-scale energy storage because they offer unmatched performance, cost, safety and availability, provided some specific technical issues are solved, such as cathode durability.

IZA has focused on monitoring this emerging market and seeking opportunities to educate the industry about zinc’s inherent advantages to encourage investment and product development of zinc technologies.

IZA launches a zinc-air fuel cell demonstration in the Republic of Malawi with funding from the Common Fund for Commodities (CFC) and technology from the Alternative Energy Development Corporation (AEDC). The project will take place in the village of Zomba, Malawi, and will include the installation of various zinc-air fuel cell systems.

IZA supports a “next generation” hydraulically-refuelable zinc-air fuel cell under development at the Lawrence Livermore National Laboratory and the University of California Berkeley. This technology differs from that of EFL in that it does not require reconstructing the battery with each recharge. The technology was successfully developed and tested and is the basis for a number of zinc-based start-up company efforts.

IZA launches a zinc-air water transportable fuel cell demonstration in the Republic of Malawi with funding from the Common Fund for Commodities (CFC) and technology from the Alternative Energy Development Corporation (AEDC). The project will take place in the village of Zomba, Malawi, and will include the installation of various zinc-air fuel cell systems.

IZA supports ZESTEC in sponsoring a major workshop in Shanghai, China to showcase zinc-air technology.

IZA supports Hydropower Canada in demonstrating the zinc-air fuel cell technology in an electric snowmobile.

IZA joins a three-year research program with the National Science and Engineering Research Council of Canada, the National Research Council and the University of Alberta to investigate the use of room temperature ionic liquids to enhance the performance of zinc-air batteries.

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Zinc is essential for the normal healthy growth and reproduction of plants, animals and humans. When the supply of plant-available zinc is inadequate, crop yields are reduced and the nutritional value of crop products is impaired.

Research and field experience have demonstrated that the addition of zinc to fertilizers can significantly enhance soil fertility as well as crop quality and yield, thus supplying more zinc to people’s diets. Applying zinc-containing fertilizers to soils and crops is a simple, rapid and cost-effective solution to correct zinc deficiency in soils and crops and combat malnutrition in humans. Zinc-containing fertilizers increase crop productivity and yield and provide better crop nutrition and improved human health.

IZA’s objective in crop nutrition, in addition to realizing a large new market for zinc, is to increase the productivity and nutritional content of crops by promoting the use of zinc-containing fertilizers as a long-term solution to human malnutrition. Initial focus of this work is countries with large agricultural infrastructure and zinc-deficient soils, notably, China, India and Brazil.

The strategy is to work through government agencies, agricultural extension offices and the fertilizer industry to highlight and educate on the beneficial effect of zinc fertilizers for crop productivity, food security and human health.
Zinc is an essential micronutrient for human health. It is vital for the proper functioning of the immune system and crucial for growth, and physical and brain development in infants, children and teenagers.

In spite of the proven benefits of adequate zinc nutrition, approximately 2 billion people still remain at risk of zinc deficiency.

Zinc deficiency is a major health problem in developing countries but it is one which can be readily addressed with inexpensive, simple and existing tools such as zinc supplements. Young children are most impacted. Zinc deficiency weakens their immune system and leaves them vulnerable to diarrhea and infections such as pneumonia which claim millions of lives of children under the age of five every year. Zinc deficiency is also accountable for growth retardation or stunting, and impaired intellectual capacity preventing children from developing to their full potential.

IZA is taking a global lead in advocating for programs aimed at addressing zinc deficiency. The goal is to ensure that information about zinc and health is globally available to nutritionists, health professionals, public-health policymakers, the media and the general public, and to stimulate zinc-deficiency intervention programs through promotion of dialogue between zinc nutrition experts, nutrition programs and public-health agencies.

IZA’s partnership to eliminate global zinc deficiency and improve health outcomes in developing countries has been recognized by the Copenhagen Consensus. In endorsing the project, former President Bill Clinton stated: “It’s almost absurdly simple: a major, major win for that little money... [and yet] something so simple that 90 percent of us wouldn’t have a clue as to what to do about it.”

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Environment issues play an influential role in the shaping of zinc markets. While much progress has been made, industry continues to face scrutiny and challenges from local, national and international regulatory agencies.

IZA has maintained a core program on zinc-related environment and health issues for most of its 20-year existence. The primary focus of this program is to provide a global and regional framework to assess regulatory challenges to zinc use, and to coordinate industry responses based on a strong program of applied research. IZA can and has produced the critical information needed for the regulatory agencies to base their decisions on sound science. A key part of this work is to communicate and open dialog to disseminate information and outcomes from these research programs.

This commitment, and the quality of the research, has earned IZA a global reputation as a reliable source of information for not only IZA members, but also for regulatory agencies, international organizations and other industry associations. This standing has allowed the industry to participate in regulatory discussions providing a conduit for industry concerns and ideas to be heard by the regulatory community, ultimately resulting in a more balanced approach to environmental regulations. It also connotes corporate responsibility and serves to build public trust through the industry’s active participation in environmental and health stewardship programs.

**European Risk Assessment for Zinc—ongoing zinc and zinc compounds are dealt with in the priority list for risk assessments to the Environment by the competent national authorities.** As chemicals management requires a sound science foundation for effective and efficient regulatory responses, IZA has maintained a core program on zinc-related environment and health issues for most of its 20-year existence. The primary focus of this program is to provide a global and regional framework to assess regulatory challenges to zinc use, and to coordinate industry responses based on a strong program of applied research. IZA can and has produced the critical information needed for the regulatory agencies to base their decisions on sound science. A key part of this work is to communicate and open dialog to disseminate information and outcomes from these research programs.

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- **1994** IZA joins with other metal associations to form an Ecotoxicity Research Program (ETAP) comprised of test reports and research guidelines.

- **1996** The Zinc Ecotoxicity Research Program was initiated to characterize the fate and effects of zinc in the environment and to provide guidance to the zinc industry and highly regarded source of environmental research. This panel comprises top experts from national and international organizations and other industry associations. This standing has allowed IZA to participate in regulatory discussions providing a conduit for industry concerns and ideas to be heard by the regulatory community, ultimately resulting in a more balanced approach to environmental regulations. It also connotes corporate responsibility and serves to build public trust through the industry’s active participation in environmental and health stewardship programs.

- **2001** Development of Meta-Zine: The database is launched. This tool will later inform risk assessment for zinc. IZA conducted a project to characterize the fate and effects of zinc in the environment. This was an unprecedented effort to provide a common database of environmental effects data for any metal, representing information on more than 260 species from 1200 publications for this project. The database formed the foundation for the development of the Zinc Ecotoxicity Research Program (ETAP). The database was launched. This database will inform risk assessment for zinc and other metals.

- **2006** The Zinc Ecotoxicity Research Program was initiated to characterize the fate and effects of zinc in the environment and to provide guidance to the zinc industry. This panel comprises top experts from national and international organizations and other industry associations. This standing has allowed IZA to participate in regulatory discussions providing a conduit for industry concerns and ideas to be heard by the regulatory community, ultimately resulting in a more balanced approach to environmental regulations. It also connotes corporate responsibility and serves to build public trust through the industry’s active participation in environmental and health stewardship programs.

- **2007** The Zinc Ecotoxicity Research Program was initiated to characterize the fate and effects of zinc in the environment and to provide guidance to the zinc industry. This panel comprises top experts from national and international organizations and other industry associations. This standing has allowed IZA to participate in regulatory discussions providing a conduit for industry concerns and ideas to be heard by the regulatory community, ultimately resulting in a more balanced approach to environmental regulations. It also connotes corporate responsibility and serves to build public trust through the industry’s active participation in environmental and health stewardship programs.

- **2008** The Zinc Ecotoxicity Research Program was initiated to characterize the fate and effects of zinc in the environment and to provide guidance to the zinc industry. This panel comprises top experts from national and international organizations and other industry associations. This standing has allowed IZA to participate in regulatory discussions providing a conduit for industry concerns and ideas to be heard by the regulatory community, ultimately resulting in a more balanced approach to environmental regulations. It also connotes corporate responsibility and serves to build public trust through the industry’s active participation in environmental and health stewardship programs.

- **2009** The Zinc Ecotoxicity Research Program was initiated to characterize the fate and effects of zinc in the environment and to provide guidance to the zinc industry. This panel comprises top experts from national and international organizations and other industry associations. This standing has allowed IZA to participate in regulatory discussions providing a conduit for industry concerns and ideas to be heard by the regulatory community, ultimately resulting in a more balanced approach to environmental regulations. It also connotes corporate responsibility and serves to build public trust through the industry’s active participation in environmental and health stewardship programs.

- **2010** The Zinc Ecotoxicity Research Program was initiated to characterize the fate and effects of zinc in the environment and to provide guidance to the zinc industry. This panel comprises top experts from national and international organizations and other industry associations. This standing has allowed IZA to participate in regulatory discussions providing a conduit for industry concerns and ideas to be heard by the regulatory community, ultimately resulting in a more balanced approach to environmental regulations. It also connotes corporate responsibility and serves to build public trust through the industry’s active participation in environmental and health stewardship programs.

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Increasingly, the zinc industry is being asked to provide information to downstream users of zinc, and zinc-containing products, on the environmental footprint of the materials it produces. Material specifiers and product engineers in key end-use markets like building, construction and automotive, are more and more interested in selecting materials that have the best environmental profile while meeting traditional cost, quality and technical performance criteria.

Understanding the environmental footprint of zinc starts with documenting the resource requirements and environmental releases associated with upstream metal production operations, but it also involves understanding the impacts and benefits of using zinc during other stages in the product life cycle. These benefits can arise in use (e.g., extending the life of galvanized steel products) and through end-of-life recycling (e.g., by utilizing recycled zinc to create new products).

IZA, working on behalf of the global zinc industry, is committed to continually assessing the sustainability of zinc and zinc products through the development of sound scientific information, and communicating this information to the key markets and stakeholders.

Through the Zinc for Life initiative, recycling program and other activities, IZA will continue to develop and communicate information on the sustainability aspects of zinc and zinc products to position zinc as a material of choice and to meet the changing needs of the markets and stakeholders.