International Copper Association
Annual Report 2002

COPPER CONNECTS LIFE.

Values

- Integrity
- Innovation
- Trust
- Credibility
- Commitment
- Empowerment
- Passion

Vision

Inspiring the World about Copper's Essentiality for Health, Technology, and the Quality of Life

Mission

To promote the use of copper by communicating the unique attributes that make this sustainable element an essential contributor to the formation of life, to advances in science and technology, and to a higher standard of living worldwide.

INTRODUCTION

The International Copper Association, Ltd. (ICA) is the leading organization for promoting the use of copper worldwide. The Association's thirty-seven member companies represent more than 80% of the world's refined copper output, and are among the largest copper and copper alloy fabricators in the world. ICA is responsible for guiding strategy, funding, and implementing initiatives and promotional activities worldwide. Headquartered in New York, ICA has regional offices in Brussels, New York, Santiago, and Singapore.

ICA programs and initiatives are executed from thirty-one locations in twenty-four countries. Programs to accomplish the goals of ICA's strategic plan are focused on copper's major end uses. These programs include wire and cable for the transmission of power and information, copper tube for safe water and gas delivery systems, and products for architectural and industrial applications. ICA also supports scientific studies regarding copper's role in human health and the environment, research and development leading to new uses for copper and its alloys, and communicates information about the benefits of copper throughout the world.

LETTER FROM THE CHAIRMAN

Dear ICA members:

It is our belief that copper is a material of the future with outstanding properties: essential to life, a driver of sustainable development due to its recyclability and its multiple applications in electrical efficiency, and key to technological development and industrial growth in the XXI century. Our product is the basis for ICA's success in achieving its mission and goals.

ICA has performed as the marketing arm of the copper industry, increasing and defending our markets. We believe that our effectiveness in increasing copper demand creates value to the industry and its members.

ICA's ability to increase market demand is directly dependent on its member's support and participation. Therefore I would like to thank all those who have collaborated with ICA during the last year, and I would like to invite all those who have not joined ICA to do so, both for the industry's and their own benefit.

We are seeking to get full participation and close collaboration among primary producers, independent smelters and refiners, fabricators, assemblers, distributors, complementors and end users, to be able to integrate our non-integrated industry, and to maximize the effectiveness of market development.

ICA's capacity to deliver measurable results is critical to be successful in getting continued member support and credibility, therefore corresponding efforts by staff and members are underway.

In 2002, ICA faced a critical budget situation. This led us to review our strategic plan and the level of resources we were willing to commit to our marketing effort. The result of this revised strategic plan leaves us with a focus on 6 initiatives and 3 supporting activities.

Just to highlight some initiatives or activities, we are creating the capacity to anticipate future technological developments that may become opportunities or threats for copper. We still have to have a better understanding of the drivers that influence end use industries in deciding their choice of materials. Activities in technology, product development and market intelligence are taking care of these important strategic aspects.

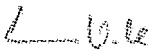
Challenges of sustainable development are growing in importance. We have advanced in understanding the impact of copper on health and environment. Now we must do more to assure that regulators make their decisions based on sound scientific findings and that our environmental and health work can feed into marketing tools. Consumers are increasingly considering sustainability issues in deciding the materials they will use and life cycle analysis is becoming the norm. Our initiatives in Health & Environment and Sustainable Electric Energy are addressing these topics.

In trying to maximize value we have maintained the focus of our promotional efforts on those regions or markets with the highest growth potential and where copper intensity use is still low. In the new strategic plan the China initiative takes care of this vision.

With a more focused strategic plan, more efficient use of resources, new management practices, team work and member involvement, we believe we can obtain a similar impact in tonnage, of around 800,000 tons, with a smaller budget, that will ramp up to US$ 40 million by the year 2006. This compares to the US$ 60 million budget estimated in the 2000 Strategic Plan for 2005.

I have to thank the staff and the different member committees that showed a high level of commitment in going through the review exercise as well as the flexibility to adapt the organization to a reduced budget without losing effectiveness.

I thank you sincerely for your continued support.



Juan Villarzú
Chairman
International Copper Association Ltd.

LETTER FROM THE PRESIDENT

Dear Colleagues:

An effort to characterize the past year at the ICA might borrow the opening line of the famous novel, *A Tale of Two Cities* by Charles Dickens, the great English writer of the 19th century: "It was the best of times, it was the worst of times." For the ICA Network, the last year was the worst of years, and the best of years. Markets in our industry, with the exception of China and Russia, continued slack on a worldwide basis.

Given these business conditions, and a substantial reduction in our finances, the ICA, midway through 2002, redirected its budgetary and program efforts. We assembled 20 key senior leaders from our four regional offices and various Copper Development centers from around the world in late June in Tarrytown, New York.

There, we had copper marketing experts from 12 different countries, speaking 10 different native languages. In just three days, these dedicated professionals crafted a new budget process, a reduced budget for 2002 and a 2003 budget consonant with current industry funding capability. The group also conducted an initial review of the ICA Strategic Plan.

It may be said that change, even forced fundamental change, brings opportunity. This brings us to why the past twelve months can be considered as the best of years for the ICA. The effort described above and many subsequent meetings of subject matter experts within the ICA, and of the Advisory and Executive Committees of the Board of Directors, led the ICA to focus more sharply in certain areas and to broaden its scope in others.

In response to market threats and opportunities and member interests, the ICA Network now is focused on six key strategic initiatives. In 2002, we launched a new Technology Initiative, which leads advanced project work in the Automotive, air conditioning, copper metal processing and other markets. Much changed is the Sustainable Electrical Energy Initiative, which replaces the product and consumption focus of electrical energy efficiency, to include the generation, transmission, distribution and consumption phases in power. The Environment Initiative now stretches farther downstream on a formal basis, encompassing the concept of product stewardship. We will be shifting our focus from fundamental research toward applied research and issue management in product markets. This means placing a clear priority on objective science applied by regulators affecting copper product markets. We also are launching a new initiative in the Wire and Cable market. These important markets will have a focal point within the ICA to ensure that member company expertise can be harnessed to help drive demand for copper. Efforts in China will continue to guarantee that copper's full potential will be realized in what now comprises the single largest geographic market in the world for our red metal.

Finally, we turn to Building Construction. This initiative delivers about 75% of the total estimated tonnage impact from all ICA Network marketing efforts. Our Building Construction team spans all regions, and shares best practices globally. The team also has defined key process improvements in project evaluation and selection. This means product market experts will be assisting one another to ensure the strongest project selection process and uniformly high quality projects. In short, the ICA Network is on its way to becoming an effective, integrated global team, where organizational barriers to success are eliminated and a collegial spirit of work is combined with individual accountability. This means more efficient use of resources, both professional and financial.

The past twelve months saw much change at the ICA. We have described something of the functional changes at the ICA, but it is people who drive change and improvement. Ultimately, people account for success. It is with a vision of the future and real pride of association that we present our leadership.

Pablo Botteselle, Peter Charlton, Andy Kireta, Sr., and John Schonenberger, ICA's Regional Directors, each merit mention and thanks for their strong commitment to and leadership in driving change throughout the Network as members of the ICA Management Committee. The same may be said of Tony Lea, who rose to Senior Vice President, Marketing and who brings his marketing expertise and 15 years of metals and copper specific experience to the effort.

Hal Stillman joined the ICA Network as Director, Technology bringing 30 years of technology research and commercialization experience. Miguel Riquelme joined as Director, Latin America delivering critical expertise of several key markets within the region and more than 20 years of highly valued end-use market expertise. Sergio Bittencourt joined the ICA Network as Director, Sustainable Electrical Energy. Sergio delivers 20 years of work history in the electrical industry in various markets worldwide, including critical developing markets in Brazil, India, the Philippines and the Middle East. John Mollet, after directing successful strategic planning efforts for Sustainable Electrical Energy, assumed full responsibility, as Vice President, for funding efforts globally. And, Scott Baker whose leadership and team-driven effort earned the position Director, Environment Program, brings a 25-year career of human health science and policy knowledge.

Let us also say thank you to the family of Dr. Christopher Lee, and Jean Lee, especially. That you allowed the ICA and copper industry to share Chris's intellect and passion has enriched us all.

Finally, we close with praise for our dedicated and valued employees in each of our 31 offices worldwide, with gratitude to our committed members and confidence in our collective future.

Looking forward, we see more efficient use of resources and more effective programs. We also see copper recognized as vital to modern technology, essential to health, and a key driver of sustainable development.

Francis J. Kane
President
International Copper Association, Ltd.

INITIATIVES

SUSTAINABLE ELECTRICAL ENERGY (SEE)

In the second half of 2002, the Electrical Energy Efficiency Initiative expanded in scope to become Sustainable Electrical Energy (SEE). In addition to promoting the energy efficiency of equipment such as motors and transformers, the program includes the effectiveness and efficiency of electrical systems in the complete chain of generation, transmission, distribution and end-use. This approach is timely in that it meets the spirit of the Summit on Sustainable Development, which recognized and endorsed the critical importance of sustainable energy.

The Die-Cast Copper Motor Rotor Project managed by CDA Inc. continued the process of technology transfer. Several motor companies invested in equipment that will enable them to manufacture new motor designs and launch commercial products in 2003. The rotor team provided expert advice and demonstrations, including, with USDOE assistance, an event that attracted 70 motor-manufacturing executives and government officials. The team also assisted companies in Asia, Europe, North and South America with prototyping and production set-up. Potential usage exceeds 100,000 tonnes annually for this entirely new copper market.

ICA was the major sponsor of the Third International Conference on Energy Efficiency in Motor Driven Systems (EEMODS 02) organized by the European Commission in Treviso, Italy in September 2002. At the same venue, the European Commission and the International Energy Agency joined ICA in sponsoring the International Transformer Workshop organized by the European Copper Institute. This in turn led to a global forum, Promotion Partnership for High Efficiency Transformers (PROPHET), which drafted a position paper to promote higher transformer efficiencies to government policymakers. Industry, government and energy-efficiency advocates were well represented at both events.

The International Motor Software project for the analysis of energy savings moved into its final development phase. Project software enables users to select energy-efficient electric motors from an extensive database and calculate the resulting energy and cost savings. The European Community joined this effort, which is managed by ICA and co-sponsored by the Chilean, U.K. and U.S. governments. Countries will be able to load their local motor and market data into the software shell, thereby making it available to users throughout the world.

The ICA Network continued its management and oversight of programs that promote increased copper consumption in a number of countries and regions, including Brazil, China, India, Europe and the U.S.A. The bottom line: increased awareness of the benefits of high energy efficiency on the part of users, support from a variety of voluntary programs, and a host of new standards and regulations — many of which reflect the effort of ICA programs. In all cases, these activities led to an increased (and continually increasing) market share for copper-intensive, energy-efficient products. ■

TECHNOLOGY

The year 2002 marked several important events in ICA's support of copper technology: one longstanding R&D effort attained full commercialization during the year, and one made significant progress toward the same end. In order to build on this success, ICA instituted a full-scale Technology Initiative that will restructure and invigorate the Association's approach to research and development. Overseeing the new Initiative is a Technology Steering Committee. Leading the program day-to-day is Hal Stillman, who assumed the newly created position of Director, Technology in August. His mission: to create new end-use market opportunities for copper.

Quick progress came in several key areas. A draft Copper Technology Roadmap was issued to guide future research and development activities. The roadmap will coordinate the pre-competitive research and development needed to defend copper's position in existing applications. Equally important, it will seek to validate and apply copper's properties in entirely new uses. Work began to establish a global R&D network capable of executing the needed scientific, design, and process development work while originating new concepts to increase copper use. Under the coordination of the Technology Steering Committee, a due diligence process was instituted to ensure that the technical, commercial, and legal aspects of R&D activities are investigated thoroughly prior to funding authorization.

The Steering Committee allocated approximately $1.8 million for R&D projects. The funds will be applied in part to new collaborative R&D with external organizations. Nearly $450,000 will be used for a major effort to defend copper's use in air-conditioning equipment through the development of copper-intensive, flat-tube heat exchangers. Approximately $500,000 will support high-risk R&D by a global automotive manufacturer seeking to develop technology for a revolutionary electromagnetic drive system. The technology promises to be ideal for hybrid vehicles and could replace mechanical transmissions, adding approximately 7 kg of copper per vehicle. ICA's support will help resolve copper-related technical issues in product design and manufacturing.

ICA's new initiative also will formulate plans to create a copper innovation fund that could augment R&D and commercial-

TECHNOLOGY (con't.)

ization funding available for investment in copper technology-related business ideas.

After many years in development, ICA's CuproBraze® radiator project found an industrial partner truly able to bring strong, efficient copper radiators and heat exchangers to global automotive and other markets. In 2002, SHAAZ, a 60-year-old Russian radiator manufacturer, selected CuproBraze over competing technologies. The company began production at its dedicated 12,000-square meter (130,000-square foot) plant early in 2003, and by 2005, expects to increase production to 450,000 units.

With strong ICA support, work intensified on CDA Inc.'s development of the semi-solid metal (SSM) casting process for copper alloys. The process currently is used for production of cost-effective precision parts in a number of metals. Brass — and other alloys — will soon be among them. A die set for the production of a commercial brass lever handle was ordered (and will be delivered in 2003), and several manufacting partners agreed to submit parts to be cast and tested.

With demonstrated success in hand, and a new initiative to guide future work in place, new product and process technology unquestionably will play a role in expanded copper usage in the years to come. ■

ENVIRONMENT PROGRAM

ICA's Environment Program Advisory Committee developed a mission statement in 2001 that articulates the key long-term objective of the Environment Program: copper is widely recognized as essential to health, benign to the environment, indispensable to modern living, and positive for sustainable growth and development.

In 2002, the Environment Program began a strategic shift in emphasis from improving the state of scientific knowledge principally for regulatory support to include science for product support of the copper industry's health and environmental interests. Implementing this shift meant focusing on stewardship and sustainability of copper products, protection and defense of existing copper markets, development of new copper markets, promotion of copper's beneficial characteristics, and improved understanding of copper's public health and environmental characteristics.

Efforts continued to support government regulators with objective science, build the confidence and trust of non-government organizations, engage the wisdom of the scientific community and empower the general public with information on the health and environmental aspects of copper. In the process, the Environment Program began its integration with ICA product promotion programs to make its knowledge base directly applicable and available to the defense and promotion of copper products.

These efforts resulted in several tangible accomplishments, most notably, a major initiative, a voluntary risk assessment undertaken by the European Copper Institute with the agreement of the European Union. This risk assessment, which will continue for several years, involves a complex web of analyses to define potential health and environmental effects risks of copper. On another front, ICA successfully defended the copper tube market in California, disseminating objective scientific results in alliance with trade unions and non-government organizations. The Environment Program generated 115 scientific publications as a result of original ICA-sponsored research — more than doubling the productivity in each of the previous four years.

In 2002, it became clear that the less complex health and environment questions about copper had been solved or were close to solution. More complex scientific issues continue to emerge requiring new focus and more concerted attention, involving sustained (multiyear) research. In this way, we will gain scientific understanding and technical information to apply to regulatory initiatives in key product markets. Implementation of a long-range health research strategy, developed in 2001, commenced with diligence. In addition, a platform of fundamental knowledge acquired in preceding years, most notably on the Biotic Ligand Model (BLM), served to launch longer-term research on the environmental effects of copper. In this effort, validation of the BLM in North America extended to other regions of the globe, and research on applying the BLM to ecological settings beyond acute effects in freshwater began. To complete the picture, long-term research on global environmental concentrations of copper in air, water, and soil, and human and ecological exposure to these concentrations also commenced.

In this process, the BLM won worldwide support, acute health effects of copper were fully characterized, and understanding of how copper controls and how copper acts in the human body, were advanced significantly. We forged closer ties with other metals organizations and the Copper Research Information Flow Project (CRIF) gained recognition as a worldwide resource (evidenced by over 170 requests for assistance, including many from institutions influential to copper markets). Also, the ICA Communications Program supported the Environment Program with a series of outreach products to technical and non-technical audiences, explaining the benefits of copper in human health. These materials included press kits, media press conferences, white papers on specific issues, a CD-ROM video on the essentiality of copper in human health and nutrition, exhibits at large scientific meetings such as the American Dietetic Society, and placements of articles on copper essentiality and deficiency in the popular press.

ENVIRONMENT PROGRAM (con't.)

The Environment Program engaged regulatory communities in countries where policies and practices reflect incomplete understanding of health and environmental issues. Our staff drove debate at global forums regarding the sustainability of copper and other nonferrous metals. The ICA Network built stronger bridges to the public interest sector (including leading environmental, wildlife, and advocacy organizations such as the World Wildlife Fund and the California South Coast Environment Group), to create mutual understanding, identify opportunities to converge opinion, and find common ground. These engagements took place through initiatives of ICA's regional operations in response to local concerns, in cooperative global activities of the International Council on Mining and Metals (ICMM), and the Nonferrous Metals Consultative Forums on Sustainable Development (NFMSD). The ICA will build more such bridges.

Similarly, we broadened the global representation of ICA's network of scientists and scientific work, instituted regulatory and market issue management procedures, and established regional environment committees to articulate market priorities for research, engaged in environmental education outreach, held scientific forums, and addressed local and regional environmental issues. In the process, the Environment Program integrated global, regional, and local environment staff connected to the global and regional promotion programs. ■

REGIONAL PROGRAMS

ASIA

China, with its robust economy and an aggressive program to modernize its infrastructure, clearly was the most encouraging copper market in 2002. Indeed, copper consumption in China exceeded 2.6 million tonnes last year to become the single largest geographic market for copper. Other Asian countries showed varying degrees of recovery and best can be described as promising, while Japan clearly remained troubled by recession. India, still a relatively minor copper consumer in proportion to its population, represents one of the largest prospects for growth over the long term. Given this broad diversity of economic realities, ICA's Asia Office sought means that most cost-effectively suited the opportunities and challenges at hand. A strategic review meeting held in Kuala Lumpur in May provided overall direction, which included a strong focus on China; developmental activities in India at an appropriate pace; the ICA exploration of opportunities for future promotion in Indochina and Indonesia; and the investigation of Korea and Taiwan markets as resources became available.

In response, ICA-Asia initiated three, new, multi-year projects during 2002. The first is a defensive effort in China to resist incursion by aluminum into the important air-conditioning market, in which China is now a world leader. Also begun in China was a modest 2-year program to encourage the conversion of blast furnace walls to copper. ICA's costs here are low (in keeping with expected tonnage returns), but conversions to date suggests that success will continue of its own accord once promotion halts. In India, ICA-Asia opened a defensive program to retain copper as the material of choice for tractor radiators, and, if possible, to regain market share in commercial-vehicle radiators lost to aluminum in the early 1990s. In Japan, ICA participated in a one-year project that provided TV coverage of the restoration of an historic vessel (the *Kaiyo Maru*, which sank in 1868) using copper mesh as an environmentally friendly protective shield against destructive shipworms and a benign material to the adjacent marine ecology. In addition, ICA-Asia opened an office in Guangzhou to tap opportunities in Southern China, began investigative work in Indochina (particularly Vietnam) to explore new markets for wire and cable products, and, along with several member companies, undertook preliminary investigative work in Korea and Taiwan to identify opportunities and threats to copper use in those countries.

Ongoing programs constituted the bulk of ICA-Asia's work during 2002, and these provided a gratifying number of achievements throughout the year. Leading the list is the China Building Wire Program's success in influencing regulatory bodies to upgrade electrical codes to regional and/or international standards. ICA buttressed this milestone event with a "push-pull" marketing strategy that encourages developers to meet or exceed the revised codes (push), while concurrently educating homebuyers about copper's safety, convenience and functionality (pull). Extension of the program to intelligent wiring should help to drive intensity of use in the residential construction market.

One of the most significant achievements of ICA China in 2002 was the successful creation of a joint commission between the Ministry of Construction and the State Economic and Trade Commission, whose mission is to promote the use of copper and other non-ferrous metals in the Building and Construction industry throughout China.

The China Electrical Energy Efficiency Program continued to promote the use of new and more efficient magnetic ballasts, the cumulative gain from which over the

ASIA (con't.)

past six years has exceeded 30,000 tonnes of copper. Copper realized an additional 12,000-tonne gain when China upgraded transformer standards to more copper-intensive designs, thanks in part to ICA-Asia's strong relationship with the State Power Corporation.

Preferential plumbing codes favorable to copper also were approved, and the China Fuel Gas program now is poised for exponential growth. In addition, the China Home Heating Program identified significant opportunities for growth in solar and radiant heating installations.

ICA's promotional support in Australia led to the installation of Smart Wiring™ packages in 14,000 new homes. More than 50 major developers now sell the packages, which increase the amount of copper in homes by 10 kg to 30 kg. As the result of the SEA Building Wire Program's successful promotion of third-wire (earthing) systems, we anticipate substantial growth as well in developing ASEAN countries.

In India, ICA focused its electrical promotion programs on government agencies, gaining their support to convert wiring from aluminum to copper. The Maharashtra Public Works Department, the Rajastran Housing Board, the Andra Pradesh Housing Board, and the Andra Pradesh Railway Board all took decisions to recognize the safety and performance benefits of copper. The effort, which included partnering with local manufacturers, resulted in a gain of 6,000 tonnes in copper usage. While modest in tonnage terms, this 44% gain over 2001 suggests the future potential to be realized in this largely untapped market. Much the same may be said for the India Plumbing Tube Program. Copper tube also has been introduced for fuel gas applications in the major target markets of Mumbai and Delhi, where consumption reached 900 tonnes in 2002. Fuel gas suppliers have responded positively to the promotion campaign and we expect further gains, particularly in targeted high-end markets. Perhaps the most significant success, not only for 2002, but for the future, was the mandate for copper-wound distribution transformers to replace the older aluminum ones by the Indian State Electricity Boards, with the support and encouragement of financial bodies such as the Asian Development Bank. ICA-Asia believes this change will create an ongoing momentum for copper under the auspices of increased energy efficiency.

Elsewhere in South East Asia, ICA-SEA staff convinced the Hong Kong Housing Authority's New Works Department to use copper in place of LGI for new construction, a move that placed copper in 35,000 additional units during 2002 and gave copper a nearly 100% market share on the island. ICA-SEA began a similar effort for gas applications in Malaysia, seeking to convert individual developers to copper following regulatory approval granted during the preceding year. Increased efforts in wire and cable commenced in Indochina and Indonesia with good support by local partners.

Despite impressive progress, threats to copper use remain throughout the region. Beyond the air conditioning and radiator situations already mentioned, there is concern over the market share pressure from thermoplastics in hot water plumbing systems and substantial growth in wireless communication and data technologies.

ICA-Asia and its centers instituted a number of cost-saving programs and procedures, key elements of which are the "Doing More for Less" campaign and a performance measurement effort that is directly tied to quantifiable results. In 2002, China realized a cost savings of US$ 319,000. This sum was achieved by saving costs in many different areas, including reducing travel expenses, encouraging partner co-operation, and pursuing competitive bids for services.

There also is greater integration among individual programs: The China and India Building Wire programs and the China and SEA Power Cable programs now share valuable resources, and technical publications on copper tube applications are distributed throughout the region. ICA's China offices are broadening their reach by working with organizations such as the China Consumer Association and Fire Brigade Bureau and by attracting new partners, including the Shanghai Water Authority and the North Shanghai, Dazhong and Pudong gas companies. And, in what may qualify as the ICA-China Office's most cost-effective outreach program, an innovative campaign now utilizes electrical engineering students to bring information about copper to audiences well beyond the reach of the organization's four-member team.

India continues to develop as one of the most cost efficient units due to its lower operating costs and leveraging of partner strengths and resources coupled with a high energy level of staff. Membership continues to grow, with Mehta Tubes and SSPL Tubes joining the ICA-India organization, Viega International signing on with ICA's South East Asia office, and more new partners in our Australian "smart wire " program. ICA-SEA also broadened its influence with new Vietnamese partners in the Ministry of Industry, the Institute of Energy, Electricity of Vietnam (EVN) and the Vietnam Association of Construction Contractors.

Finally, regional reporting procedures have been streamlined and improved, extensive use made of the Internet and other communications channels, and over-all administrative and core costs are down by more than 10%. Of immeasurable importance, however, is the spirit of teamwork and willingness to help each other that has arisen among the ICA-Asia staff. ■

EUROPE

The protracted business downturn in Europe had an especially strong impact on copper's important building construction markets, causing a 4% decrease in overall usage during 2002. Russia provided one of the few bright spots, increasing demand by some 20% — to 300,000 tonnes — thanks in part to a government-mandated switch to copper for domestic building wire.

In response to current economic conditions, The European Copper Institute (ECI) redirected some of its major programs to improve cost-effectiveness. The European building construction campaigns, for example, were given an entirely new emphasis and plumbing promotion, which once relied heavily on training, literature and trade show participation, now focuses on positioning copper. The aim is to link the metal with clean, fresh water and safe gas delivery in the eyes of both installers and end-users. The program confronts competitive products with copper's advantages, including the metal's proven anti-bacterial properties. This is currently an important issue in Southern Europe. In a parallel effort, ECI conducted attitude surveys to understand how plumbers actually perceive copper. The surveys identified segments of that audience (mainly age-related, as it turned out) that respond favorably to the program's "clean, safe" message. Using this new insight, ECI now tailors specific programs in ways that reinforce the reasons why plumbers select one material over another.

ECI restructured the European Copper Roofing Program, renaming it as the European Copper in Architecture Program to reflect its broader scope. Here again, promotion includes appeals to the audience's emotional engagement, citing copper's undeniable beauty and its ability to inspire creativity; its durability and the longevity it brings to structures. ECI emphasizes these messages in seminars, literature and direct involvement with individual architects and their professional organizations — techniques that have proven effective elsewhere. The new approach already has evoked positive responses, especially with regard to the design flexibility offered by pre-patinated materials.

The Electric & Electronic program, now a part of the Sustainable Electrical Energy (SEE) program, has also been redirected, emphasizing closer ECI ties to associations with which copper shares common interests. Working alongside such new partners as the International Union of Electricity (UIE), the Association of Electrical Installers (AIE) and Europacable (the European cablemakers' federation), ECI now promotes the economic advantages of high-efficiency electric motors and the energy-saving benefits of up-sized wire gauges, while concurrently gaining support for copper-friendly improvements to existing building codes. The new strategy is indirect — creating new demand for copper by helping our partners meet their objectives — and cost-effective. It also is successful. There can be little doubt that it contributed to the estimated 20,000 tonne increase in copper usage credited to the Electric & Electronic program as a whole in 2002.

In the third quarter of the year, ECI submitted its mid-term report on the Leonardo Power Quality Program to the European Union (EU). This enterprise focuses on improving electrical installation standards in non-residential structures, improving power quality through such techniques as increased neutral-conductor sizing, the rational design and dispersion of branch circuits, and low-resistance earthing. All of these issues increase the use of copper wire, strip and connectors. ECI's efforts actually constituted the largest single funding award — $800,000 over three years — granted under the EU's 2001 program. ECI's report received full endorsement and resulted in the release of the second half of the funds.

Three new projects initiated in 2002 include an automotive project to develop an electromagnetic transmission. ECI also helped restructure trade associations representing the solar thermal energy industry and gained a seat on their new advisory board — an ideal platform to promote copper as the material of choice in this rapidly expanding business sector. Work also began on a project to identify growth opportunities for the brass and copper alloy products manufactured by ECI's fabricator members.

Progress continued on the Voluntary Risk Assessment, perhaps ECI's most important project, focused on copper's reputation as a safe and environmentally friendly metal. An independent peer review panel of seven leading European scientists guides our work, and Italy will represent the EU as review country. The copper industry agreed to support the project and will supply health and environmental data from individual manufacturing sites.

Introduction of the copper-based euro coinage enabled ECI's European Media Relations Program to host three significant events: the first celebrated the launch of the coins themselves; the second focused on the recycling of the old national coins, and the third stressed copper's leading role in improving energy efficiency. Extensive use was made of ICA's "Copper Connects Life" tag line in all publications. ECI also managed a major press conference in Sweden that spotlighted copper's health and nutritional benefits. Sweden was selected as the conference venue in view of the country's strong focus on health issues. The conference gained favorable coverage in Swedish newspapers and in health and consumer-oriented magazines. A follow-up attitude survey will be conducted in 2003 to evaluate lasting impressions left by the event.

Finally, but most significant in light of the current economic situation, ECI's Board of Directors endorsed a proposal to restructure the funding and governance of copper promotion across the continent. The plan, which will come into full effect on January 1, 2004, will ensure closer integration between ECI and the European copper centers and thereby increase the harmonization of funding from fabricator members. Perhaps most important, however, the plan ultimately will lead copper-using industries — key to our markets — to increase their involvement with ECI programs. ■

LATIN AMERICA

The year 2002 was difficult for the Latin American economy, yet it was a favorable year for ICA's regional organization, which strengthened its influence in key industries and took important steps to gain increased market share for copper as conditions improve. Working closely with the Procobre copper centers, ICA succeeded in raising the level of the centers' member-company participation and helped introduce a number of new partners to the copper network. ICA also began a wide-ranging program to restructure the Latin American organization, strengthening the regional office while laying the groundwork for what will become an organizational matrix that will enable available resources to be used cooperatively and more cost-effectively. Results can be seen in the upturn in copper consumption that began late in the year and continued into 2003.

Chile, for example, saw a 7% gain in copper tube usage, and while other markets remained unchanged throughout most of 2002, expectations for 2003 are optimistic. Procobre-Chile therefore positioned its campaigns in anticipation of renewed growth. Procobre-Chile continued its strong efforts to influence standards in the electrical, building and construction sectors, gaining representation on the Pan-American Standards Commission (COPANT), an influential position that enables Procobre-Chile to propose standards directly to key decision-makers. Key targets here are energy efficiency regulations for refrigerators, domestic air conditioners, and lighting. In building construction, Procobre-Chile placed major emphasis on the defense of copper tube as a safe medium for water transport. With ICA help, the center reacted quickly to a potentially troublesome situation in the city of Talca and is working with key health authorities and supporting research to prove that a lack of proper water treatment was to blame for high copper levels in the local drinking water.

The Chilean center also mounted a world-class exhibit depicting over 4,000 years of copper history, *La Civilización y Nuestro Cobre*, by the Chilean National Museum of Natural History that drew over 170,000 attendees in Chile and later toured other Latin America countries.

In Argentina, building construction markets began recovering in the second quarter of 2002, providing a favorable climate for Procobre-Argentina's promotion of copper tube for plumbing and natural gas delivery systems. Utilities, trade unions and national universities were key targets for this important activity. The Argentinean center also remained closely involved in the development of a new electrical code for residential and office buildings. The National Electrotechnical Association approved the new code last year, and adoption by the Province of Buenos Aires followed soon thereafter. The province represents more than 30% of Argentina's wire and cable usage. The code follows international safety standards, provides for a third wire (grounding), increases the total amount of wiring in structures, and mandates an increase in the size of certain copper conductors, which bodes well for increased copper consumption.

Procobre-Argentina also organized *The Spirit of Copper*, the first Latin American copper-in-design contest and the first to be endorsed by the International Council of Societies of Industrial Design (ICSD). An international jury selected 29 of the more than 207 articles entered — many of them on domestic furniture and fixtures — for an exhibition that attracted 10,000 visitors per week along with nationwide media coverage.

In neighboring Brazil, the spotlight fell on energy conservation when Procobre-Brasil conducted a highly successful Electrical Energy Campaign in cooperation with WEG Motores, a world leader in the manufacture of electric motors. Thanks in part to the Brazilian copper center's participation, WEG saw sales of its copper-intensive high-efficiency models increase by 13%, to 52,000 units, a significant increase when compared to the 1.6% rise in the Brazilian GDP. WEG is not a member company, but contributes fees and participates in Procobre-Brasil's programs. The center also gained the Vale do Rio Doce Company as new associate. Beginning in 2004, this large mining company will produce nearly 150,000 tonnes of copper in the northern region of the country.

Procobre-Brasil also placed strong emphasis on communications. In the first 6 months of the year, three existing manuals, along with software on gas tube, generated more than 22,500 downloads, and almost 10,000 individuals downloaded the *Guide to Brazilian Electric Standards.* Total visits to the site during 2002 nearly doubled to 60,636.

Across the continent, ICA helped Procobre-Perú expand its activities throughout the Andean region by establishing Web-based virtual offices in Columbia, Ecuador, Bolivia and Venezuela. Visits to these virtual-office websites increased by more than 50% in 2002 (to 89,000 visitors), and requests for information about copper applications grew by 23% (to 864). In addition, the Peruvian copper center participated in more than 100 direct promotional activities, reaching 25,250 professionals and contractors — an increase of 30% over the previous year. Organizations that act on the center's behalf reached an additional 6,000 individuals.

Work conducted by partners is carried out at no cost to Procobre-Perú. The center has already signed 10 agreements with major institutions and consultancies in the region. Examples include the Educational Cooperation Institute (INCE-Venezuela), for which Procobre-Perú prepared courses on copper's role in electrical safety and energy/cost-savings, and the National University of Colombia, where the center engaged two students to survey construction projects, report on current electrical practices and identify areas with promising market potential.

This strong interest in copper mirrored copper usage, which rose by approximately 10% in Peru, surpassing the rise in construction-industry output (+8.3%) and nearly doubling the gain in GDP (+5.2%) in that country. Estimates for the entire Andean

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region put usage in 2002 at between 90,000 and 100,000 tonnes.

Procobre-México successfully took on the task of rebuilding its organization and recruited three major brass mills to support its ongoing promotion campaigns. Marketing departments at IUSA and Nacobre (tube mills with a combined 85% market share) and Condumex Conductores Monterrey, as well as IUSA (wire and cable mills with more than 85% of the Mexican market) now participate actively on Procobre-México's committees.

Procobre-México carries out much of its promotion through organizations for professionals, engineers, architects and technicians in the electrical and plumbing trades. The center succeeded in registering 1,380 members in these "clubs", reaching 847 of them in 45 courses on nine topics related to the use of copper wire, cable and tubing. The center also gained representation on three operating committees governing standards for electric motors, wire and cable and plumbing and gas tube. In addition, Procobre published and distributed a total of 51,000 videos, flyers, and brochures on 11 topics and conducted visits that resulted in 205 new personal contacts among current or potential copper users. ■

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U.S. refined copper usage for 2002 remained depressed, down an estimated 9.9% from 2001. Residential construction and automotive markets were bright spots. Weaknesses in commercial construction and telecommunications markets led to most of the decline. Meanwhile, Canadian refined copper usage showed a 3.2% increase. North American promotional initiatives remained vigorous throughout the year protecting vital market share and positioning the region to take advantage of the next economic recovery.

Interest in copper clearly remains high. For example, as part of the North American Plumbing Tube and Fittings Initiative (NAPTFI), CDA Inc. has worked with the unionized piping sector's United Association (UA) Instructor Training Program for more than 35 years, training instructors from UA local unions across North America. Classes were overbooked last year, so plans are being made for 2003 to accommodate the increased demand. Also in development is a similar program for UA's regional training centers. Overall, more than 100 seminars on copper piping products under NAPTFI during 2002, reached more than 3,400 tradesmen.

The Canadian Copper and Brass Development Association (CCBDA) took an aggressive stance in the water tube market when it initiated its "Who Says Plastic Is as Good as Copper?" advertising campaign. Early response indicates the ads are generating a great deal of attention and positive results. CCBDA's promotion of copper gas tube was also successful, as evidenced by a study showing copper's market share in Canada growing from virtually zero to 40% over the past 10 years. In the USA, California has accepted copper tube under its new State Plumbing Code, an indication that other holdout jurisdictions may follow suit, which suggests improved penetration of the fuel gas market nationally.

Promotion of copper's all-important electrical applications continued during 2002. A new advertisement prepared for the Power Quality Initiative stresses the importance of robust wiring for computers and other sensitive loads. It joined two previously developed ads in an ongoing campaign running in North American trade magazines. The ads are supported by three new power-quality case histories, one of which describes how a copper grounding system saved a bank's data center from certain destruction during a lightning strike. Exemplary power quality messages such as this are expected to help CDA Inc. increase annual U.S. commercial/industrial building wire usage by 20,000 tonnes within five years.

Building wire may also gain from an Elevated Ambient Temperature Study recently begun in Las Vegas, Nevada. This research project gathers temperature data from carefully instrumented wiring bundles in simulated residential and commercial structures to measure the effects of temperature on the electrical current capacity of conductors. When wire gets too hot, provisions in the National Electrical Code® spell out de-rating factors, which can require that the wire conductors be upsized. If research shows that Code provisions are too low, CDA Inc. will call for appropriate pro-copper changes.

A CCBDA full-scale study of Canadian wire and cable markets, to be completed in 2003, will provide guidance on future electrical market opportunities. CCBDA's continuing campaign to promote the benefits of copper versus aluminum wire and cable was pulled back a little in 2002 while a study on the connectability of copper and aluminum cables was conducted. Results to date clearly show the superiority of copper conductors — information that is useful for promotion throughout the world.

A substantial portion of the Building Wire Promotion Program remains dedicated to direct communication with homeowners. The medium used so successfully over the past few years is Home Planning, a collection of camera-ready feature articles mailed to more than 6,000 daily and weekly newspapers in the USA. A complement to this project is a consumer checklist asking homeowners to inspect their homes for signs of electrical problems. By year end, more than 50,000 copies had been requested by electrical contractors serving the residential retrofit market for their distribution to potential customers. The annual impact of

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CDA Inc. building wire promotion, other than for power quality, on U.S. use of residential building wire is expected to reach 15,000 tonnes annually within five years.

CDA Inc. continues to partner with energy-related organizations whose goals complement ICA-supported promotion campaigns. Among others, it participates on the advisory boards of the Motor Resource Center (a joint effort of Washington State University and Advanced Energy) and the Consortium for Energy Efficiency's Motor Decisions Matter campaign. The latter program currently has 29 sponsors, including the U.S. Department of Energy (USDOE).

CDA Inc. also completed and began distributing a CD-ROM on high-efficiency motors and transformers (now included as part of a USDOE educational package), created a new energy-efficiency course for architects, developed a new advertisement featuring NEMA Premium™ motors and began distributing a new MotorSlide motor selection tool.

Annually, the Sustainable Electrical Energy Initiative is expected to add 20,000 tonnes in the USA for magnet wire, busbar, and other wire and cable products. CDA Inc.'s promotion of telecommunications wire and cable should result in a further annual gain of 15,000 tonnes in the burgeoning residential market. CDA Inc. began distributing two CD-ROMs that describe structured wiring tailored to homebuilders and installers, respectively. Structured wiring is replacing replacing old phone wiring in U.S. homes and is expected to result in a five- to ten-fold increase in copper home wiring.

North American members (along with the general public) will see more copper in buildings and structures, thanks to the North American Initiative for Copper in Architectural Applications (NAICAA). This long-standing campaign promotes copper through seminars (385 in 2002) and direct contact with architects and contractors (an estimated 10,000 in 2002), This intense promotion resulted in an approximately 40% penetration of the North American architectural market. When CCBDA specifically tracked the results of its NAICAA activity in Canada, it found that fully 70% of architectural firms receiving copper-in-architecture seminars chose copper for their design projects.

In the health and environmental arena, ICA-supported research conclusively demonstrated that contact with copper-containing alloys renders the pathogen *E. coli* O157:H7 nonviable far faster (between 1 and 6 hours) than contact with stainless steel (2 to 7 days). Research continues, but implications are already quite favorable for the potential increased use of copper alloys in applications such as food-handling equipment, architectural hardware for healthcare facilities, and in public transportation equipment.

In other actions with worldwide impact, CDA Inc. presented a course on the Biotic Ligand Model at meetings of four technical societies in the USA and successfully applied to present the course at the Asia/Pacific Society of Environmental Toxicology and Chemistry in 2003. Related to domestic issues, CDA Inc. organized and facilitated a symposium for its members on NSF Standard 61 and California's Proposition 65, both of which have important implications regarding the use of copper-based products.

On the education front, CDA Inc. began developing a program with the University of North Texas to develop an elementary school curriculum that incorporates messages about the usefulness and essentiality of copper. The materials will bridge studies in language arts, math, science, art and social science. Rollout of the program is expected next year.

Finally, the CDA-managed die-cast copper motor rotor project passed a significant milestone in 2002 when a major motor manufacturer committed to adopt the process for commercial production. Development of the semi-solid metal (SSM) casting process for copper alloys gained commercial recognition and is advancing on schedule. Further information about these ICA-supported projects can be found in the Technology section of this Annual Report. ■

FINANCIALS

	2002	2001	2000	1999	1998	1997
REVENUES						
Member's Dues	36,221,523	27,812,963	29,152,491	29,302,301	25,735,000	21,085,000
Interest	50,492	426,757	436,362	278,650	241,000	268,000
Other Revenue	372,314	326,695	472,873	1,230,689	663,000	528,000
Total Revenue	**36,644,329**	**28,566,415**	**30,061,726**	**30,811,640**	**26,639,000**	**21,881,000**
EXPENDITURES						
Program Expenses	32,834,625	28,433,709	24,051,992	22,150,074	21,816,000	17,260,000
Program Management	2,882,948	2,874,440	2,385,940	2,175,471	2,190,000	1,571,000
Program Planning	1,378,801	1,556,988	1,141,102	1,346,720	1,472,000	1,134,000
General and Administrative	2,005,529	1,556,958	1,659,784	1,657,501	1,862,000	1,302,000
Total Expenditures	**39,101,903**	**34,422,125**	**29,238,818**	**27,329,766**	**27,340,000**	**21,267,000**
CHANGES IN FUNDS						
Increase (Decrease) in Fund Balance	(2,457,574)	(5,855,737)	822,908	3,481,874	(701,000)	614,000
Fund Balance, beginning of Year	2,907,244	8,763,244	7,940,336	4,458,462	5,160,000	4,546,000
Fund Balance, End of Year	**449,670**	**2,907,244**	**8,763,244**	**7,940,336**	**4,458,462**	**5,160,000**
PROGRAM EXPENSES	84%	83%	82%	81%	80%	81%
Program Management	7%	7%	8%	8%	8%	7%
Program Planning	4%	4%	4%	5%	5%	5%
General and Administration	5%	6%	6%	6%	7%	6%
PROGRAM EXPENDITURES						
Building Construction	8,890,662	9,539,889	8,949,640	8,168,255	9,038,078	7,494,587
Industrial	991,899	772,941	750,285	754,993	1,068,083	1,299,517
Electric and Electronic	7,352,059	7,048,966	5,849,890	5,022,463	4,598,946	3,270,522
Environmental	4,401,669	3,929,549	3,797,927	3,502,463	2,788,214	1,606,932
Program Svces, Communications	11,198,336	7,142,364	4,704,250	4,702,239	4,322,199	3,588,790
Total	**32,834,625**	**28,433,709**	**24,051,992**	**22,150,074**	**21,815,521**	**17,260,348**
REGION						
Asia	2,848,302	2,629,602	2,375,145	2,423,283	2,287,976	1,616,980
China	2,817,220	2,105,770	1,210,512	938,743	299,441	266,980
Europe	6,513,035	9,053,082	7,126,843	7,071,097	7,737,702	5,781,132
North America	8,227,398	5,085,300	4,813,155	4,149,934	5,639,642	4,302,846
Latin America	3,172,373	2,714,985	2,407,851	2,184,044	1,877,085	1,641,940
World	5,215,418	3,991,447	1,717,294	2,188,832	1,220,409	2,112,732
Environmental	4,040,879	3,198,413	3,244,364	3,194,141	2,753,266	1,537,732
Total	**32,834,625**	**28,778,599**	**22,895,164**	**22,150,074**	**21,815,521**	**17,260,342**

COPPER DEVELOPMENT CENTERS & REGIONAL OFFICES

HEADQUARTERS

Francis J. Kane, President
International Copper Association, Ltd.
260 Madison Avenue, 16th Floor
New York, NY 10016-2401, USA
Phone: (212) 251-7240
Fax: (212) 251-7245
E-mail: FrancisJKane@copper.org
www.copperinfo.com

ASIA

Peter B. Charlton, Director Asia
International Copper Asia Ltd.
87 Beach Road
#04-02 Chye Sing Road
Singapore 189695
Phone: (65) 334-9209
Fax: (65) 334-6221
E-mail: pbcharlton@attglobal.net
www.asia.copper.org

Joyce Zhou, Director China
International Copper Association, Ltd. - Shanghai Office
Room 2711-2717, 27F Shanghai Central Plaza
381 Haui Hai Zhong Road
Shanghai 200020
People's Republic of China
Phone: (86-21) 6391 5816
Fax: (86-21) 6391 6331
E-mail: icash@public7.sta.net.cn
www.copper.org.cn

International Copper Association, Ltd. - Beijing Office
Rm. 1016, Canway Building
66 Nan Li Shi Lu
Beijing 100045
People's Republic of China
Phone: (86-10) 6841-5577 Fax: (86 10) 6802-0990
E-mail: hankqiu@public3.bta.net.cn

International Copper Association, Ltd. - Guangzhou Office
Unit 2301, Citic Plaza,
233 Tainhe N. Road
Guangzhou, 510613
People's Republic of China
Phone: (86 -20) 3891-1866
Fax: (86 20) 3891-1378
E-mail: icagzoffice@163.net

Tarun Grover, CEO International Copper Promotion Council - India
602, Omega, Hiranandani Gardens
Powai, Mumbai 400076 India
Phone: (91-22) 693-7989
Fax: (91-22) 693-9282
E-mail: tarun_grover@icpci.org
www.copperindia.org

John Fennell, Executive Director
Copper Development Association of Australia, Ltd.
Suite 1, Level 7, Westfield Towers
100 William Street
Sydney NSW 2011 Australia
Phone: (61-2) 9380-2000
Fax: (61-2) 9380-2666
E-mail: jfennell@copperdev.com
www.copper.com.au

Dr. M. Viswanathan, Director
Indian Copper Development Centre
27B Camac Street
Calcutta 700 016 India
Phone: (91-33) 247-5724
Fax: (91-33) 247-2763
E-mail: icdc.India@smb.sril.in
www.indiancopper.org

Jun-ichi Hatano, Managing Director
Japan Copper Development Association
Usagiya Building, 5F, 10-10
I-Chome Ueno, Taiton-ku
Tokyo 110-0005 Japan
Phone: (81-3) 3836-8821
Fax: (81-3) 3836-8828
www.jcda.org.jp

Danny Chow, Director
Copper Development Centre - South East Asia
87 Beach Road
#04-02, Chye Sing Building
Singapore 189695
Phone: (65) 6334-3828
Fax: (65) 6334-6221
E-mail: cdcsea@singnet.com.sg
www.copper.org.sg

John Schonenberger, Chief Executive

EUROPE & AFRICA

European Copper Institute
Avenue de Tervueren 168, b 10
Brussels 1150 Belgium
Phone: (32-2) 777-7070 Fax: (32-2) 777-7079
E-mail: eci@eurocopper.org
www.eurocopper.org

Benôit Dome, Director
Copper Benelux
Avenue de Tervueren 168, b 10
Brussels B-1150 Belgium
Phone: (32-2) 777-7090
Fax: (32-2) 777-7099
E-mail: mail@copperbenelux.org
www.copperbenelux.org

Angela Vessey, Manager
Copper Development Association
5 Grovelands Business Centre
Boundary Way, Hemel Hempstead
Herts HP2 7TE
United Kingdom
Phone: 44 1442-275-205
Fax: 44 1442-275-205
E-mail: copperdev@compuserve.com
www.cda.org.uk & www.brass.org

Pierre Blazy, Managing Director
Centre d'Information du Cuivre
Laitons et Alliages
30, Avenue de Messine
Paris 75008 France
Phone: (33-1) 4225-2567
Fax: (33-1) 4953-0382
E-mail: centre@cuivre.org
www.cuivrre.org

Dr. Anton Klassert, Director
Deutsches Kupfer-Institut
Am Bonneshof 5
Dusseldorf 40474 Germany
Phone: (49-211) 479-6300
Fax: (49-211) 479-6310
E-mail: info@kupferinstitut.de
www.kupferinstitut.de

Kostas Tsapras, Director
Hellenic Copper Development Institute
74 L. Riankour St.
Athens 115 23 Greece
Phone: (30-1) 690-4406
Fax: (30-1) 640-4463
E-mail: info@copper.org.gr
www.copper.org.gr

COPPER DEVELOPMENT CENTERS & REGIONAL OFFICES

Robert Pinter, Director
Hungarian Copper Promotion Centre
Kepiro u.9., - H - 1053
Budapest, Hungary
Phone: (36-1) 266-4810
Fax: (36-1) 266-4804
E-mail: hcpc@euroweb.hu
www.hcpcinfo.org

Vincenzo Loconsolo, Director
Istituto Italiano del Rame
Via Corradino D'Ascanio 1
Milano 20142 Italy
Phone: (39-2) 8930-1330
Fax: (39-2) 8930-1513
E-mail: info@iir.it
www.iir.it

Piotr Jurasz, Director
Polish Copper Promotion Centre
Pl. 1 Maja 1-2
Wroclaw 50-136 Poland
Phone: (48-71) 781-2502
Fax: (48-71) 781-2504
E-mail: pcpm@miedz.org.pl
www.miedz.org.pl

José Ramón Morales, Director
Centro Español de Información del Cobre
Princesa, 79
Madrid 28008 Spain
Phone: (34-1) 544-8451
Fax: (34-1) 544-8884
E-mail: cedic@pasanet.es

Mariann Sundberg, Director
Scandinavian Copper Development Association
Legeringsgatan
Västerås S-721 09 Sweden
Phone: (46-21) 19 82 73
Fax: (46-21) 19 80-35
E-mail: scda.info@outokumpu.com
www.scda.com

Vadim Ionov
European Copper Institute Moscow Rep. Office
12 Trubnaya Street, Millenium House
103045 Moscow, Russian Federation
ICQ 111223297
Phone: (7-095) 787-2792
Fax: (7-095) 787-2767
E-mail: vsi@eurocopper.org
www.eurocopper.ru

Alistair Peterkin, Manager
Copper Development Association, (Pty) Ltd.
P.O. Box 14785
53 Rendell Road
Wadeville, Germiston 1422 South Africa
Phone: (27-11) 824-3916
Fax: (27-11) 824-3120
E-mail: copdevsa@icon.co.za

LATIN AMERICA

Miguel Riquelme, Director - Latin America
International Copper Association, Ltd.-
Latin American Office
Santo Domingo No. 550, Of. 101
Santiago Chile
Phone: (56-2) 639-0106
Fax: (56-2) 664-7421
E-mail: mriquelme@copper.org

Richard Bialobroda, Director - Argentina & Uruguay Instituto del Cobre
Reconquista 559
Piso 6 B
Buenos Aires 1003 Argentina
Phone: (54-11) 4314-1159
Fax: (54-11) 4314-2322
E-mail: rbialobroda@copper.org

Antonio Maschietto, Jr., Executive Director
Procobre-Brasil
Avda. Brigadeiro Faria Lima,
2128 - 2 andar - conjunto 203
Cep 01451-903 - Jardim Paulistano
Sao Paulo - SP
Brazil
Phone: (55-11) 3816-6383
Fax: (55-11) 3816-6383
E-mail: masca@procobrebrasil.org
www.procobrebrasil.org

Hernán Sierralta W., Executive Director
Procobre-Chile
Santo Domingo 551 - 2° Piso
Of. 201
Santiago Chile
Phone: (56-2) 664-7611
Fax: (56-2) 638-1200
E-mail: hsierra@procobre.cl
www.procobrechile.org

Efren Franco, General Manager
Procobre-México
Av. Sonora N° 166, Piso 1
Col. Hipodromo Condesa
Mexico D. F. 06100 Mexico
Phone: (52-5) 211-1201
Fax: (52-5) 286-7723
E-mail: efranco@copper.org

Miguel I. De La Puente Quesada, General Manager, Procobre-Perú
Calle Francisco Grana No. 671
Magdalena
Lima 17 Peru
Phone: (51-1) 261-4067
Fax: (51-1) 460-1616
E-mail: mpuenteq@copper.org
www.procobreperu.org

NORTH AMERICA

Stephen W. Knapp, Executive Director
Canadian Copper and Brass Development Association
49 The Donway West
Suite 415
North York, ON M3C 3M9 Canada
Phone: (416) 391-5599
Fax: (416) 391-3823
E-mail: coppercanada@onramp.ca
www.coppercanada.ca

Andrew G. Kireta, Sr., President and CEO
Copper Development Association, Inc.
260 Madison Avenue
16th Floor
New York, NY 10016 USA
Phone: (212) 251-7212
Fax: (212) 251-7234
E-mail: agkiretasr@cda.copper.org
www.copper.org

MEMBERS

Antofagasta Minerals S.A.	Chile
ASARCO Incorporated	USA
BHP Billiton Plc	Australia
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Compania Miñera Doña Ines de Collahuasi SCM	Chile
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Corporación Nacional del Cobre de Chile (CODELCO- Chile)	Chile
Empresa Miñera de Mantos Blancos S.A.	Chile
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Outokumpu Oyj	Finland
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Palabora Mining Company Limited	South Africa
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Revere Copper Products, Inc.	USA
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Sociedade Mineira de Neves-Corvo, SA, SOMINCOR	Portugal
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Keith Faulkner, Managing Director Ok Tedi Mining Limited

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Kosuke Sekine, Executive Officer, Nippon Mining & Metals Co., Ltd.

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David Newbold, President & CEO Compania Miñera Zaldivar

Kalevi Nikkila, President Outokumpu Copper Products Oyj

Masao Hirano, Senior Executive Officer Mitsubishi Materials Corporation

M. Brian O'Shaughnessy, Chairman, President & Chief Executive Officer, Revere Copper Products, Inc.

Kenneth Pickering, Chief Development Officer, Base Metals, BHP Billiton, Plc.

Fernando Porcile, Senior Vice President, Copper, Noranda Chile Limitida

Juan Villarzú, President & CEO Corporación Nacional del Cobre de Chile (CODELCO-Chile)

J. Steven Whisler, President & CEO Phelps Dodge Corporation

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John P. Crofts	BHP Billiton
Christoph Geyer	KM- Europa Metal AG
John Hansen	Mueller Industries, Inc.
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Genaro Larrea	ASARCO
Isabel Marshall	CODELCO-Chile
Arthur R. Miele	Phelps Dodge Corporation
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Ricardo Olivares	Noranda Inc.
Eski Pirttijarvi	Outokumpu Oyj
James B. Squire	Rio Tinto Plc
Rodrigo Toro	Compañia Minera Doña Ines de Collahuasi

PROGRAM REVIEW COMMITTEE

Company	Member	Alternate
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ASARCO Incorporated	Gary Miller	Christopher Strand
BHP Billiton	John P. Crofts	
Compañia Minera Doña Ines Collahuasi	Rodrigo Toro	Pablo Bunster
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Compania Miñera Zaldivar	Alvaro Cuadra	
Empresa Miñera de Mantos Blancos S.A.	Logan Kruger	
Huttenwerke Kayser AG	Hans-Gerhard Hoffmann	
Kennecott Utah Copper	James B. Squire	James M. Cowley
KM Europa Metal AG	Achim Baukloh	
Mexicana de Cobre	Genaro Larrea	Mario Vinageras
Miñera Escondida Limitada	John P. Crofts	
Mitsubishi Materials Corp	Katsuhiko Masuda	Kenichi Watase
Mueller Industries, Inc	John Hansen	
Nexans	Michel Rousseau	Yves Parasie
Nippon Mining & Metals Co	Takeshi Kurushima	Meiichiro Matsuura
Noranda Inc.	Ricardo Olivares	Andrew Falls
Norddeutsche Affinerie	Michael Landau	
North Mining Ltd.	Keith Calder	
Ok Tedi Mining Limited	James Grubbs	
Outokumpu Oyj	Eski Pirttijarvi	Ahti Pesonen
Outokumpu American Brass	J. Stevens	
Outokumpu Copper Products Oy	Eski Pirttijarvi	
Palabora Mining Company Limited	Harry Kenyon-Slaney	
Phelps Dodge Corp.	Arthur R. Miele	Stephen T. Higgins
P.T. Freeport Indonesia	Steve Kubicek	
Revere Copper Products, Inc.	M. Brian O'Shaughnessy	Donald Commerford
Southern Peru Copper Corp	Mario Vinegeras	Jose de los Heros
Rio Tinto plc	James B. Squire	
Sumitomo Metal Mining Co.	Kotaro Tomino	Koichi Kaku
Umicore	Phillipe Wattel	Jan Janssen
Wieland-Werke AG	Peter Wuestrum	
WMC (Olympic Dam Corporation) Pty, Ltd.	James Eric Eggins	

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Sr. Vice President, Marketing & Strategic Planning	Anthony C. Lea International Copper Association, Ltd.
Vice President, Administration & Finance, Assistant Secretary	Gerald J. McGee International Copper Association, Ltd.
Vice President	John R. Mollet International Copper Association, Ltd.
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Shereen M. Fawzy	Manager, Accounting, Database and Graphics
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Martha Rosario	Executive Assistant
Joseph Locascio	Mailroom Assistant

Counsel:
Stuart D. Baker, Chadbourne & Parke LLP