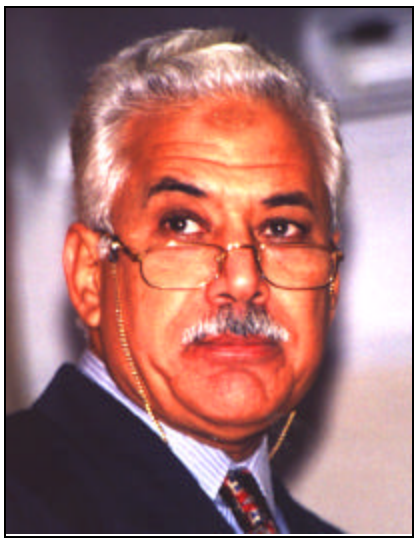
ILMC
International Lead Management Center, Inc
Issue 6, October
NewsCasting

ICF Highlights Risk Reduction

Tenth Technical Exchange Conference - Grafenau, Germany

A backdrop of the beautiful pristine forests of the Bavarian National Park set the scene for the International Crystal Federation's (ICF) tenth Technical Exchange Conference held in Grafenau from the 12th to the 15th September. With this scene in mind the technical exchange opened with the conference chairman, Arnold Forrester of Royal Doulton, emphasizing that the crystal industry's first commitments are the health of the customer and the protection of the environment. These commitments were reflected in the conference's technical papers of which eighty percent presented during the conference addressed lead risk reduction.



Dr. Ahmed Ahmed, Professor of Glass Science at the Egyptian National Research Center

Dr. Ahmed Ahmed, Professor of Glass Science at the Egyptian National Research Center, explained to the delegates the progress made at the Glass Research Laboratory in Dokki, Cairo. Dr. Ahmed described how the laboratory had successfully modified the composition of crystal glassware to minimize any lead release. In addition, he outlined the procedures that had been developed to treat the internal surfaces of existing crystal formulations to inhibit lead solubility and migration. Furthermore, Dr. Ahmed stated that progress had been made in the preparation of lead free glass crystal formulations employing various combinations of titanium, zinc and potassium oxides in place of the traditional lead oxide.

ILMC Program Manger, Brian Wilson, explained to the conference how, in conjunction with the ICF and Rutgers University, in the USA, the ILMC had initiated the preparation of a comprehensive Technical Manual covering all aspects of Lead Risk management in the manufacture of lead crystal, including processes to restrict lead leaching. Brian also informed the delegates that plans are being made for the preparation of manuals describing environmental issues associated with different lead crystal production processes that minimize occupational exposure. Rutgers University has also been commissioned by the ILMC to produce guidelines to reduce lead exposure for hobby enthusiasts and small-scale ceramic production facilities.

Thomas Lang, of conference hosts F. X. Nachtmann GMBH, presented a very interesting technical paper that considered the energy consumption and nitrogen oxide emissions using oxy-fuel burner firing. He explained that F. X. Nachtmann sponsored research in this field had developed two distinct regimes that would reduce the production of undesirable nitrogen oxide (NO_X) gases. The first, a new procedure, was to undershoot the liquid crystal bath below the conventional burner with oxygen to produce lower NO_X levels in the exhaust gases. The alternative method developed, that is the use of one hundred percent pre heated oxygen in the burner mix, reduced NO_X and carbon dioxide (CO_2) production by forty percent compared to conventional firing and specific energy consumption by a third.

Companies that have any reservations about the adoption of European Environmental Directives and ISO 14001 would have been absorbed by Michael Wilcock's paper. He described the benefits that Waterford Crystal Limited had derived from the introduction of these standards. The requirement to separate storm and process water had considerably reduced water consumption and improved the quality of the liquid effluent discharge. Reduced emissions for hydrofluoric acid had been achieved by triple scrubbing and noise levels reduced by twenty five percent. Annual fuel efficiency improvements of five percent and the complete

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ILMC Makes The Connection

The Portsmouth - Severodvinsk Connection was formed in 1994 as an exchange project between the city of Portsmouth, New Hampshire in the USA, and Severodvinsk located on the banks of the White Sea in the northwest region of the Russian Federation. The city of Severodvinsk once had the world's largest nuclear submarine building complex and Portsmouth has the oldest naval shipyard in the USA, including nuclear submarine maintenance facilities. Both cities now face similar social problems following nuclear decommissioning and naval downsizing. In addition Severodvinsk is facing potentially serious health and environmental problems after years of industrial and nuclear waste dumping, with the city's water supply contaminated with heavy metals.

The objective of the Portsmouth - Severodvinsk Connection is threefold. First, to promote ways and means creating new business enterprises in order to generate employment. Second, to explore and exchange technical solutions that will reduce environmental contamination and third to facilitate research into peaceful uses of nuclear technology, which is partly sponsored by US Department of State and the National Endowment for the Humanities.

Since 1996 there have been three exchange visits by the two cities and in August this year Linda Gunn, a Vice President in the Business Development and Sales Division of the New Hampshire Bank, hosted a delegation visit from Severodvinsk's sister city Arkhangelsk. The delegation comprised of the President of Sevsnab, Mr. Oleg Grigoriev, the Vice-President, Mr. Alexandre Lugov and Mr. Alexandre Kushev, a commercial banker with the Moscow Industrial Bank.

Sevsnab is a major automotive battery retailer and distribution company in the Severodvinsk - Arkhangelsk region, and as a responsible organization has just started a pilot collection scheme for "spent" lead acid batteries which are ultimately destined for recycling. The ILMC were invited to meet the Sevsnab delegation by the US Executive Secretary of the US - Russia Environment Committee, Gary Waxmonsky.

From left to right: Brian Wilson, Oleg Grigoriev, Linda Gunn, Alexandre Lugov and Alexandre Kushev

Brian Wilson, ILMC Program Manager, discussed with the delegation various battery collection schemes recommended by the Battery Council International (BCI) and proven to increase the rates of collection and recycling for lead acid batteries.

The delegation also reviewed with the ILMC the environmental benefits of secondary lead smelting and the desirability of integrated sales, collection and smelting facilities. It was, however, suggested to the group that despite such a potentially large catchment area, the Moscow Industrial Bank and Sevsnab should jointly determine the current tonnage of scrap lead acid batteries available and the likely growth in the number of automobiles and commercial vehicles over the next decade. In this context the ILMC would assist with the cost benefit analysis, environmental audit and any economic evaluation to determine whether a local secondary smelter would be a viable proposition.

Economic & Sound Recycling

Mr. Paul Frost, Development Metallurgist with primary and secondary lead producer, Britannia Refined Metals, a wholly owned United Kingdom subsidiary of ILMC Corporate Member Mount Isa Holdings of Australia, gave a timely reminder to Battery manufacturers at the sixth Lead Acid Battery Conference in Prague last month.

Examining the current situation, Mr. Frost explained that the lead industry is under ever increasing environmental and economic pressure. He emphasized that the potential for future development in the industry could only be realized if the life cycle perspective of the lead acid battery could be fulfilled.

The delegates were informed, however, by Mr. Frost, that recent developments in battery technology were not necessarily conducive to economic secondary smelting. As an example, Mr. Frost cited the introduction of battery grids with silver bearing alloys, designed to improve mechanical properties and reduce corrosion, particularly at elevated temperatures. Lead producers that rely entirely on Secondary production for their saleable products do not have and could not afford to invest in the expensive process equipment necessary to remove silver from the recovered metallic fractions and would therefore find it increasingly difficult to meet the high purity demanded by the lead oxide producers.

More recently certain lead acid batteries have been produced with antimonal cadmium grid alloys. Such batteries cannot be easily identified in the scrap feed to the recycling plant and inevitably if these alloys gain market share, cadmium will concentrate in recirculating baghouse fume and invariably increase the vigilance required in a medical surveillance program and the cost of effective liquid effluent treatment.

Mr. Frost urged battery manufacturers to consider carefully the work of the Advanced Lead Acid Battery Consortium (ALABC), because recent scientific studies had demonstrated that increasing tin levels in calcium grid alloys achieved similar improvements in grid performance to that claimed for silver and other metals that interfere with the recycling process.

Continuing, Mr. Frost turned his attention to battery case material. He said that the widely used polypropylene was an "inspired" choice because it is possible to recover it in a clean form comparatively easily. For many recyclers, during the months when depressed metal prices have eroded margins, recycled polypropylene represented a welcome source of additional income. Recycled polypropylene prices, however, depend entirely on the level of purity. The increased use of alternative plastics for case materials effectively contaminates the polypropylene recovered during the battery breaking phase of the recycling process and where the contamination is high the polypropylene is rendered virtually un-saleable.

The solution to these dilemmas, stated Mr. Frost, is for the manufacturers and the recyclers to understand each other's needs and develop strategies for improvement that sustains a viable secondary industry and maintains sound environmental performance.

Pan-American Workshop

The Pan-American Workshop on the Safe Use of Minerals and Metals, organized by the governments of Peru, Canada, Argentina, and Chile, took place in Lima, Peru, from July 1st to 3rd, 1998. The Workshop was attended by representatives of the sponsoring government public and private institutions from other pan American countries, including Brazil, Mexico and the United States.

Mr. Federico Kunz, Met Mex Penloes Vice President and ILMC Director explained the sequence of events leading to the establishment of the ILMC, namely the discussions with the Organization for Economic Cooperation and Development (OECD) that resulted in the Ministerial Declaration on Lead Risk Reduction.

Describing the response of the lead industry to the OECD Declaration, particularly from the mining companies that created the ILMC, Mr. Kunz outlined the lead risk reduction projects that the organization has initiated and supported. Special mention was made of the diverse nature of the programs in the Philippines and Mexico. Mr. Kunz also emphasized the cooperative efforts with the United Nations Environmental Program (UNEP), the United Nations Industrial Development Organization (UNIDO), and the United Nations Conference on Trade and Development (UNCTAD) as well as the associations with the International Crystal Federation and Rutgers University.

The presentation of ILMC's activities provided strong arguments to back the industry's Voluntary Action Programs as a real alternative for solutions to environmental problems. The work of the Pan-American Workshop underscored the importance of minerals and metals in the achievement of economic development and globalization. It also demonstrated the need, however, to employ an appropriate scientific basis to adequately manage environmental issues and systematically assess risks in order to set forth actions and policies that lead to appropriate management practices.

The issues relating to the communication and participation of all the government agencies and industry sectors involved also stood out from the conference Agenda.

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recycling of waste glass cullet and packaging materials had however, most significantly reduced costs. This point was reinforced later in the conference by Klaus-Peter Martinek of F. X. Nachtmann who explained that eighty five percent of unavoidable production waste vitrified in a simple melting furnace can be reused to produce saleable glassware. Michael Wilcock stated that ISO 14001 had provided the Company with the ideal tracking system to record and calculate the extent of the environmental improvements and cost benefits.

Michael J. Hynes, National University of Ireland, Galway.

Any owner or manager of an old crystal factory would have been inspired by Sven Fivelsdal from Norway's two hundred and thirty six year old Hadeland Glassverk crystal factory. He explained that the adoption of new technologies for the production of a wide range of glass crystal and the introduction of new operating regimes, including improved personal hygiene regimes, had lowered occupational lead exposure. Sven Fivelsdal explained that whilst the factory did not lend itself to modernization, occupational blood lead levels had been reduced from 28 employee's with elevated lead in blood to one employee with an unsatisfactory level.

Since the Organization for Economic Development and Cooperation's (OECD) Declaration on Lead Risk Reduction in 1996, there has been considerable interest in the development of lead substitution in the manufacture of glass crystal. Bo Johnson of Sweden's GLAFO explained that the Industry should not assume that a lead substitute would be benign, but should be prudent and continue to minimize leaching and evaluate the biosafety of new glass materials.

Michael Hynes, of the National University of Ireland, quoting extensively from the 1997 report "Lead and Human Health" published by the American Council on Science and Health informed the conference that recent scientific studies had concluded that the threat of extensive lead poisoning might have been exaggerated. Nevertheless he reminded delegates that lead is one of the most pervasive heavy metals in the environment and as a non-essential element, the Industry must protect the public from unnecessary exposure. The Crystal Industry, he advised, should aim to eliminate the risk of lead exposure by adopting national standards for occupational exposure levels and educating consumers in the safe use of crystal glassware.

A Challenge for the Next Century

At the August 98 International Symposium on Environmental Management of Mining and Metallurgical Industries (EMOMAMI-'98), in Bhubaneswar, India, Dr. Krishna Parameswaran of ILMC Corporate Member ASARCO Incorporated discussed "The 21st Century: Challenges and Opportunities for the Mining Industry", co-authored by ASARCO Vice President for Government and Public Affairs and ILMC Director, Robert Muth.

Krishna Parameswaran discussed the compatibility of mining and sustainable development and the role played by international organizations in the development of appropriate models in evaluating the impact of metals on human health and the environment. The presentation included an overview of the activities of the ILMC and the promotion of sustainable development through the lead risk reduction regional demonstration projects or Pilot Programs.

In addition during his Indian tour Krishna Parameswaran also spoke to a delegation at the National Metallurgical Laboratories in Jamshedpur. This National Laboratory is responsible for advising the Indian Government on appropriate procedures to reduce the risk of lead exposure in the country's "informal" secondary lead recovery sector. The Director of the Laboratory, Mr. P. Ramachandra Rao, expressed great interest in the activities of ILMC, which bodes well for the start of the joint ILMC and United Nations Conference on Trade and Development (UNCTAD) secondary lead project commencing next year.

In a similar vein,Dr. Craig Boreiko, Executive Director of ILMC, participated in a special symposium on "Metals and the Environment" organized and sponsored by the Metallurgical Society of the Canadian Institute of Mining in Montreal, earlier in the year. Dr. Boreiko's presentation, entitled "The International Lead Management Center: An Industry Commitment to Cooperation" noted that traditional patterns of natural resource utilization were being evaluated by international agencies in accordance with new paradigms seeking to ensure long-term compatibility of global industrial activity with the preservation of human health and the environment. The ILMC is working to make the industry a valued partner in efforts to ensure that lead use by the international community is compatible with sustainable development.

NewsCasting is published quarterly by the International Lead Management Center, a not-for-profit organization established by the International Lead Community in response to the need for international action on the issue of lead risk reduction. Please direct correspondence to :

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