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A FIRST IN RUSSIA

Since April of last year, following the attendance by the ILMC at the International Workshop on "Lead Pollution in the Russian Federation" in Moscow, Brian Wilson has been working closely with Anna Orlova of the Moscow based Center for Russian Environmental Policy (CREP) identifying possible industrial sectors for Pilot Program activities.

In 1997 the State Committee for Environmental Protection (SCEP) of the Russian Federation (RF) published a White Paper that characterized the problem of lead contamination and outlined the basis for an improvement program that would target those pathways that represented the greatest threat to both human health and the environment.



Stanislav Zubkovsky,
the General Director
of the Podolsk
Battery Works

Five key industry sectors were prioritized for action in the White Paper: petroleum refining; non-ferrous mining and smelting; automotive battery manufacturing and recycling; glass crystal production; and the pigments and decorative paints industry.

The Russian Federal Government's concept for the protection of the natural environment from lead pollution and the reduction of its effect on human health was outlined at the April workshop by Vsevolod Gavrilov, Director of the Federal Geo Information Center. This concept envisages that environmental improvements will be forthcoming as a result of the formulation of comprehensive legislative revisions, the

rehabilitation of contaminated areas, the upgrading of anti-pollution measures and the modernization of industrial enterprises through the implementation of specific pilot projects.

Complementing the proposed Russian Federal Government's concept, the ILMC identified four potential lead risk reduction pilot programs, two in the non ferrous smelting sector, one in the crystal industry and another in battery manufacturing.

Towards the end of October last year the ILMC, CREP, SCEP, the Federal Center for Geoecological Systems and the Management of the Podolsk Battery Plant signed a Memorandum of Understanding promoting the implementation of the first lead risk reduction Pilot Program in the Industrial Sector.

The "Podolsky Battery Works" (PBW) was founded in 1935 and is located about 20 kilometers south of Moscow. It was the first factory in Russia to manufacture SLI (Starter, Lights and Ignition) lead acid batteries supplying the fledgling automobile industry in the Capital and Gorky.

Today, the old factory is unrecognizable. The plant is a modern integrated enterprise producing new generation batteries to meet the changing Russian market. The enterprise produces its own polypropylene cases, oxide paste and lead alloy battery grids. The assembly lines are semi automated and each stage of the process is carefully monitored to ensure the highest quality to DIN standards.

The agreed Pilot Program Objectives are :

- ◆ To introduce internationally recognized exposure methodologies and measurements to determine the levels of environmental contamination and population exposure.
- ◆ To determine lead emissions from the Podolsk Battery Plant and if necessary, reduce the level of occupational and environmental lead exposure.
- ◆ To develop socio-economic and environmentally sound policy options and community based intervention programs in order to reduce lead exposure in the town of Podolsk.

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ILMC Attend Guatemala Workshop

In late October last year the US Environmental Protection Agency (EPA) hosted a two day Workshop on "Lead Battery Recycling" in Guatemala City, through a fund for Central American countries. This workshop focused on the toxicology of lead exposure in the workplace and the effects on people living close to lead-acid battery recycling plants.

Providing an overview of world primary and secondary lead production, David Lloyd, of the US EPA, submitted a statistical analysis showing that Latin America accounts for only 6% of world production while OECD countries produce approximately 64%. He also explained that lead acid batteries consume about 65% of total world production.

Dr. Ligia Mora-Applegate, Toxicologist with the Florida Department of Environmental Protection opened the workshop and outlined the effects of lead exposure on human health. He emphasized, however, that the success of any lead risk reduction program will depend on the effective application of previously acquired knowledge and the lessons of the past, while also bearing in mind that new developments or improvements can, and should, be introduced as required.

Complementing Dr. Mora-Applegate's presentation, Ing. Camilo Valdez, Dr. Alfredo Mendez and Ing. Fernando Garcia, from ILMC member company Penoles Industrial Services, specified the precautions necessary in industrial recycling plants to minimize the risk of lead exposure. Camilo Valdez described the various atmospheric emission control measures, that is capture and filtration, and the flow and particle measurement systems for ducts and the environment, necessary to monitor performance. Camilo also stressed the importance of sound environmental management systems for the disposal of battery acid and furnace residues, together with the containment of the plastic battery cases for further reprocessing.

Alfredo Méndez explained the essential requirements for a successful medical surveillance program in the workplace, including those preventative measures that can be taken to lower lead exposure. Fernando García Rosas illustrated the need for an accompanying biological monitoring program designed to track lead levels in and around the plant. Particular emphasis was given to providing employees with the correct protective clothing, introducing a personal hygiene regime and ensuring that respiratory protection is available and worn when necessary.

On the second day of the workshop, US EPA International Lead Program Manager, Sylvia Correa, introduced to the delegates the results of the successful reduction of lead in the environment due to the elimination of leaded gasoline based fuels. She explained that in the United States of America (USA), measurements for lead are now measuring $0.1\mu\text{g}/\text{m}^3$,

down from $1.5\mu\text{g}/\text{m}^3$ in 1977, according to charts and tables that show the correlation of lead in the environment with the level of lead in the blood of exposed children.

In his second session, David Lloyd presented a case study approach to demonstrate the effectiveness of a remediation program at a lead contaminated site in the USA. David described the process for removing and treating contaminated soils until the lead content reaches acceptable levels.



From left to right: Dr. Alfredo Mendez and ILMC Director Ing. Camilo Valdez

On the afternoon of the second day the delegates visited a secondary lead plant in Guatemala City. The facility was found to be in good order with few lead contamination problems. The local environmental authorities in Guatemala City were trying to enforce USA environmental standards in areas adjacent to and surrounding the recycling plant.

Whilst the recycling plant was operating in an environmentally sound manner the visit provided a unique insight for the delegates into the situation and the poor working conditions in the city's many unregulated side-street battery reconditioning shops that reconstruct used batteries. These shops accept "spent" batteries, which are opened to remove the metallic grids. Certain battery plates are reused and any discarded are melted into lead ingots. Unwanted pastes are sold to the regulated secondary recyclers for recovery.

The delegates' observations of these back-street reconditioning shops lead them to conclude, that despite the imposition of new regulations, they were a major contributor to population lead exposure and potentially a very serious threat to environmental contamination in the city. The elimination of this cottage industry is, however, very complex and it can be likened to that of the Mexican potters, since so many families depend on this trade for their living. However, a training and awareness campaign about the health effects of lead should have a positive outcome when combined with basic changes in the way people work with batteries. ILMC participants intend to follow up this aspect of their experience in Guatemala.

ILMC at the 20th LIA Conference

Celebrating 20 years of bringing together international experts from around the globe the Lead Industries Association (LIA) expanded this year's Lead Occupational Health and Environmental Protection Conference, in Hershey, Pennsylvania, to include two separate tracks. One track dealt with medical and occupational health matters and the other with environmental and regulatory issues.

The keynote address was given by Sally Miksiewicz, the Vice-Chairman of the East Penn Manufacturing Company, the largest single site battery recycling and production plant in the world. In a most enlightening manner she described how, even in the beginning when her Grandfather founded the company, customer service and good employee relations were the key ingredients to success. Sally explained that over the years this approach had led to the development of comprehensive programs for customer care, employee orientation, medical surveillance, industrial hygiene monitoring and environmental preservation. Indeed, only two years ago the company won the prestigious Governor's Award for Outstanding Environmental Excellence.

The ILMC was well represented at the Conference. Craig Boreiko, ILMC Executive Director, presented two sessions reviewing "Lead Mobility and Toxicity" and "Emerging Lead Health Issues". ILMC Policy Advisory Group (PAG) member, Bob Goyer, outlined the latest published research into "Lead and Nutrition". Don Robbins, Director

of Environmental Services with ILMC member company American Smelting and Refining Company (ASARCO), explained current policy and practice in soil remediation. In one of four specialized workshops Stan Cothrin, ASARCO Manager for Safety, Health and Hygiene, clarified the compliance requirements for the new US respiratory standards. Jerry Cooper, Communications and Public Relations Manager with ASARCO, emphasized the importance of good community relations and in particular the need to ensure that local authorities and populations fully understand the nature of any risks posed by lead industries.

In the International forum Dan Vornberg, ILMC Vice Chairman and Vice President of Environmental Affairs for ILMC member company Doe Run characterized the nature and effectiveness of the initial lead risk reduction programs established at the recently acquired La Oroya metallurgical complex in Peru. Leonard Surges, Environmental Manager with ILMC member, Noranda Mining and Exploration, detailed the complicated statutory requirements for the lead industry under Canadian Law. In a joint presentation, ILMC Program Manager, Brian Wilson, and Anna Orlova, visiting Professor from the Center for Russian Environmental Policy (CREP) in Moscow, described how the two organizations were planning to pool their expertise to develop a number of demonstration Pilot Programs in the Russian Federation in cooperation with the US-Russian Environment Committee.

BHP-Cannington Joins the ILMC

BHP Cannington's application for membership of the ILMC has been approved and Mick Roche, the BHP Cannington Safety, Environment and External Affairs Manager, has been appointed to the ILMC Board of Directors.

The Broken Hill Proprietary Company Limited (BHP) is an international resources company with interests in oil and gas, steelmaking and steel products, and a range of minerals including iron ore, coal, copper and manganese. In addition, BHP is developing new projects to produce titanium mineral sands, platinum, silver, lead, zinc and diamonds. BHP has specialized service businesses in transport, engineering and information technology. The Company's strength is in its global portfolio of assets and its recognized skills in discovery and development.

BHP Minerals is currently developing the world class Cannington silver, lead and zinc deposit located near McKinlay in Northwest Queensland, Australia. The deposit was discovered in June 1990 and was the culmination of more than a decade of geological research and investigation into the Broken Hill "mineralization style" of silver, lead and zinc deposits.

Following the completion of the feasibility study in late 1995, the construction phase commenced in early 1996 and was completed last year. The Cannington deposit will be developed as an underground mine utilizing both open stope and bench mining methods followed by metallurgical processing, which includes grinding, sequential flotation and leaching to produce high grade concentrates.

At full production Cannington will be the world's largest single mine producer of silver, processing 1.5 million tonnes of ore a year producing 24 million ounces of silver contained in 265,000 tonnes of lead concentrate and 110,000 tonnes of zinc concentrate.

The Membership and Associates of the ILMC are pleased to welcome BHP Cannington, which brings to the Center a track record of environmental care, social responsibility and proven management systems developed for new and emerging mining and smelting technologies.

More information about BHP can be found at the Company Internet site at:-
<http://www.bhp.com.au>

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Once the potential hazards have been confirmed the lead exposure risks will be determined and prioritized in terms of environmental impact, employee and population health, and economic and social effects.

The effective implementation of this comprehensive risk reduction project will follow the following guidelines.

community-based surveillance program to identify and monitor lead exposure among groups of the population at the highest risk of lead exposure. This surveillance program will include occupationally exposed workers and members of their families, especially their young children and populations living in the vicinity of the Podolsk battery plant.



from left to right: Elena Zaika (D. Mendeleev University & CREP), Anna Orlova (CREP), Anatoly Rakushin (PBW), Andrei Pechnikov (D. Mendeleev University & CREP), Juri Mikhailik (PBW) and Frank Boyes (ILMC)

In conjunction with the Plant Management, the ILMC will review the current Environmental Management System (EMS) to ensure compliance with legislative requirements. If necessary recommendations to revise the EMS will be prepared together with the necessary protocols suitable for transition to ISO 14001 audit procedures.

The effectiveness of the plant emission and ventilation control systems will be tested and evaluated as will the treatment of lead contaminated liquid effluent generated in the process areas. In addition water utilization will be monitored to ascertain essential requirements and reduce the level of consumption and the amount of process effluent generated.

Existing and proposed operations will be assessed and reviewed in conjunction with the Institute of Occupational Medicine and the Russian Academy of Medical Sciences in order to minimize potential point sources of occupational lead exposure and/or environmental discharges. The CREP will work with the Battery Plant Management, local governmental officers and the Federal Center for Geoecological Systems of the Russian State Committee for Environmental Protection to develop community-based policy recommendations for sustainable development of the plant and local community.

The CREP will work with the Russian Institute of Occupational Medicine, local medical authorities and the Podolsk Plant Medical Personnel to develop a

In addition CREP will also work with the plant analytical laboratory to introduce internationally accepted protocols and methodologies for lead environmental analysis and to include the site laboratory in the international QA/QC accreditation scheme and routine programs. In this respect it is envisaged that laboratory staff will spend some time assigned to a work experience program in an OECD member's battery manufacturing plant to develop a proposal for the harmonization of Environmental Standards in the Russian Federation's Lead Industry.

The ILMC and CREP will be returning to Russia in the spring to explore further risk reduction activities in glass crystal manufacturing and non-ferrous smelting.

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