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ENVIRONMENT DIRECTORATE
JOINT MEETING OF THE CHEMICALS COMMITTEE AND
THE WORKING PARTY ON CHEMICALS, PESTICIDES AND BIOTECHNOLOGY

LEAD RISK MANAGEMENT ACTIVITIES IN OECD MEMBER COUNTRIES (1993 to 1998)

PART TWO

86930

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PART TWO

ANNEX B

COLLATION OF INDUSTRY RESPONSES

Please note:

Questionnaires were divided into two parts: “Part I: Levels of Exposure” and “Part II: Description of Distinct Activities”. A few respondents did not fill in both parts.

Some respondents (both in Member governments and in industry) attached appendices, brochures, and other pertinent material. No attempt has been made to extract information from any of the attached material for inclusion in the report.

Respondents were given the opportunity to review the information in this report and submit changes or comments previous to publication.

American Industrial Hygiene Association
Part II: Description of Distinct Activities

Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	The American Industrial Hygiene Association (AIHA) is a non-profit association of approximately 13,000 occupational and environmental health professionals based in the United States. The AIHA has operated a lead laboratory accreditation programme, supported by a proficiency sample programme, since 1993. This programme operates under the US Environmental Protection Agency's (EPA) National Lead Laboratory Accreditation Programme and its supporting legislation. The programme was set up by EPA to ensure that the analysis for lead in paint chips, soil and/or dust wipes is done by competent labs and can support effective decision-making for the reduction of lead hazards. The AIHA also offers proficiency samples to support analysis of lead in air. The AIHA accredits more than 75% of the lead in labs accredited under this programme in the US. The AIHA also offers a broad range of related laboratory quality assurance programmes, and has a growing number of laboratories outside the US enrolled in them.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	

Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1993 Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	

Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	Mr Fred Grunder Manager, Laboratory Accreditation American Industrial Hygiene Association 2700 Prosperity Avenue, Ste. 250 Fairfax, Virginia 22031 Telephone: + 1 (703) 849-8888 Facsimile: + 1 (703) 207-3661 E-mail: fgrunder@aiha.org

Asarco
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure					
What is the frequency of sampling? What methods are used for blood lead analysis? Are other markers of exposure monitored? If yes, please describe.	Monthly or semi-annually, depending on blood lead levels of individuals. Blood lead level < 40 µg/dL each 6 months on medical removal - each 30 days Blood lead level > 40 µg/dL each 60 days on administrative removal - each 30 days Vena puncture blood sample collection followed by ICP Mass Spectrometer or Graphite Furnace Atomic Absorption. Zinc protoporphyrin (ZPP)				
Occupational Exposure Levels					
Males	Number of exposed workers	Glover	East Helena	Omaha	Globe
	Average blood lead levels	165	268	12	28
	Range of blood lead levels	24.7 µg/dL	22.27 µg/dL	20.33 µg/dL	12 µg/dL
		5-45 µg/dL	<5-43 µg/dL	8-38 µg/dL	<5-30 µg/dL
Females	Number of exposed workers	1	4	1	4
	Average blood lead levels	5 µg/dL	17.5 µg/dL	5 µg/dL	<5 µg/dL
	Range of blood lead levels	5 µg/dL	9-25 µg/dL	5 µg/dL	<5 µg/dL

General Population Exposure Levels	
Adult males Number of exposed workers	Globe Plant East Helena*
Average blood lead levels	721
Range of blood lead levels	< 5 µg /dL
	NA
Adult females Number of exposed workers	810
Average blood lead levels	<5 µg/dL
Range of blood lead levels	NA
	(5 µg/dL is detection limit)
Children Number of exposed workers	486 109
Average blood lead levels	3.1 µg/dL 4.32 µg/dL
Range of blood lead levels	NA < 4-21 µg/dL
	(See Table 1)
How do these values compare to those distant from your facility?	They appear to be consistent with NHANES III data.
	* At East Helena and Globe. In addition, Asarco funds a blood lead testing programme administered by the Iron County Health Department around Glover, but results are not available.

Environmental Monitoring Programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available.	Yes (East Helena, Glover, Omaha, and Globe) Yes (East Helena, Glover, Omaha, Globe, Sweetwater and West Fork) Yes (Globe and East Helena) (See Table 2)
Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead?	(See Table 3)
What actions or changes are proposed to further reduce exposure levels?	East Helena: Water treatment plant improvements, indoor storage of secondary materials and on-site disposal of contaminated soil. Glover: Upgrade of ventilation system in sinter plant and certain operations in the drossing area. Omaha: Plant shutdown in 1997. In addition, the East Helena and Glover smelters are subject to EPA regulations that were finalised in 1998; Phase IV Land Disposal Restrictions, which is likely to result in the increased storage of secondary materials in tanks, containers or buildings. To the extent that hazardous lead residues from smelting are land disposed, they have to be treated to LDR standards. Primary Lead MACT: These standards to control hazardous air pollutants, including lead, would place limits on lead emissions from primary lead smelters and require procedures to ensure that air pollution devices are functioning properly.

Table 1: East Helena Blood Lead Level Data (1975-97)

(Blood lead level for children living within a 2.25 mile radius of the smelter)

Year	Number of children tested	BLL range	BLL average	% above > 10 µg/dL
1975	90	15-67 µg/dL	28 µg/dL	100
1983	396	< 4-33 µg/dL	11.2 µg/dL	51
1987	41	< 4-35 µg/dL	10 µg/dL	36
1991	287	< 4-26 µg/dL	4.75 µg/dL	6
1995	102	<4 -14 µg/dL	5.22 µg/dL	4.9
1996	81	< 4- 10 µg/dL	4.06 µg/dL	3.7
1997	109	< 4-21 µg/dL	4.32 µg/dL	6.4

Table 2

	Air	Water	Soil
Globe	ND-007 μg/m^3 ND = non-detected	Meet pre-treatment standards	< 1000 ppm in areas surrounding plant
East Helena			CERCLA soils removal project requires removal of soil in excess of 1000 ppm lead where children under six live
Glover	< 1.5 μg/m^3 over past six quarters	< 0.027 ppm lead in NPDES discharge	Not monitored routinely
West Fork		< 0.053 ppm lead in discharge	
Sweetwater		< 0.034 ppm lead in discharge	
Omaha			

Table 3

	Air	Water	Soil
Globe	Recent emissions very low. Not much change 3-4 years		Soil concentrations have decreased due to remediation effort
East Helena		1994 n = 8, Dec 94 1995, n = 177 Jan-June, Oct-Dec	NA
Glover	1992-97 - 71% reduction	32% reduction	NA
West Fork		Reduced 75-90% with bio-treatment at West Fork in 1996	
Omaha			

Arsaco
Part II: Description of Distinct Activities

OCCUPATIONAL EXPOSURE Voluntary OSHA-Lead Industry Worker Protection Programme (Also see Lead Industries Association response) (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Asarco is participating in this co-operative programme to reduce the blood lead levels at which workers are removed from work involving high exposure to lead and the blood lead levels at which they are returned to work.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce worker lead exposure and blood lead levels.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1997 2001
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Annual data collection and reporting.
Programme results	
What are the results of the monitoring programme(s) described?	In 1997, five more workers were removed from the workplace, based on a removal level of 48 µg/dL instead of 50 µg/dL and a return level of 39 µg/dL instead of 40 µg/dL.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Continue this programme to 2000.
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Co-ordination by the Lead Industries Association.
Further information	
Who can be contacted for more information?	S.G. Cothrin Technical Services Centre ASARCO Incorporated 3422 South 700 West Salt Lake City, Utah 84119-4191 Telephone: + 1 (801) 263 5208 Facsimile: + 1 (801) 261 2194 E-mail: scothrin@asarco.com

COMPANY/GOVERNMENT PARTNERSHIP US Environmental Protection Agency's Industrial Toxics Project (33/50 Programme) (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	In response to a letter from the EPA Administrator to join this voluntary programme, Asarco committed to achieve a 30% reduction in air and water emissions by 1995 for 17 target chemicals that included lead and lead compounds.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	EPA set a goal of reducing emissions of 17 target chemicals, which included lead and lead compounds, by 33% by 1992 and 50% by 1995. In joining this programme, Asarco pointed out to EPA that about 80% of the company's releases were as inert slag, about which little could be done because the amount of slag was determined by the quality of the mined raw material. However, the company committed to a reduction target of 30% in air and water emissions of not only the 17 targeted chemicals but all chemicals on EPA's Toxics Release Inventory.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1991 1997
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Only to the extent that recycling is part of a strategy to reduce emissions.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Annual data collection and reporting.
Programme results	
What are the results of the monitoring programme(s) described?	For the period 1988-93, for the 33/50 chemicals that include lead and lead compounds, Asarco reduced releases by 55% or 460,000 pounds. For all Section 313 chemicals, Asarco reduced emissions by 37% or 4.4 million pounds.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	NA

Further information	
Who can be contacted for more information?	DA Robbins Technical Services Center ASARCO Incorporated 3422 South 700 West Salt Lake City, Utah 84119-4191 Telephone: + 1 (801) 263-5220 Facsimile: + 1 (801) 261-2194 E-mail: drobbins@asarco.com

TECHNOLOGY/PRODUCT DEVELOPMENT Globe Plant Bismuth selenide: lead-free alloy used as a substitute for lead in free-machining brasses (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Lead is constantly being regulated out of certain uses. Lead in free-machining brasses was leaching into drinking water. Asarco, Globe developed a lead-free alloy (bismuth selenide) that is used to replace lead in brass. This allows the consumer access to faucets and other plumbing fixtures that are lead-free.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To provide a lead-free alloy for the manufacture of lead-free brasses. Also, to provide foundries with an alloy that reduces worker lead exposure-currently seeing growth in the sales of this product.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1994 Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Ongoing contacts with the brass industry to understand the benefits of lead-free alloy. Tracking ongoing lead in drinking water legislation.
Programme results	
What are the results of the monitoring programme(s) described?	So far customers are satisfied with the product, as is evidenced by increased sales.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	The Copper Development Association has put on several lead-free alloy workshops. They also back the bismuth selenide product.

Further information	
Who can be contacted for more information?	Dr M.G. King Technical Services Center ASARCO Inc 3422 South 700 West Salt Lake City, Utah 84119-4191 Telephone: + 1 (801) 263 5215 Facsimile: + 1 (801) 261 5194 E-mail: mking@asarco.com

TECHNOLOGY/PRODUCT DEVELOPMENT Globe Plant Replacement of lead shot with bismuth tin shot in waterfowl hunting (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	EPA banned the use of lead shot in waterfowl hunting. In response ASARCO, Globe developed and patented the process for making bismuth tin shot as an alternative to lead.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To provide the market with an alternative to lead shot that meets the needs of the hunter and the environment. Project is moving slowly due to some licensing conflicts in the marketplace.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1992 Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Indirectly, the reduction of lead shot in waterways is a result of Asarco's work.
Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	USFW and EPA banning the use of lead shot and endorsing or approving the use of bismuth shot.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
Who can be contacted for more information?	Dr M G King Technical Services Center ASARCO Inc 3422 South 700 West Salt Lake City, Utah 84119-4191 Telephone: + 1 (801) 263 5215 Facsimile: + 1 (801) 261 5194 E-mail: mking@asarco.com

TECHNOLOGY/PRODUCT DEVELOPMENT Substitution of bismuth oxide for lead oxide (litharge) as a fire assay flux (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Asarco, Globe developed the process to produce assay grade bismuth oxide as a non-toxic alternative to lead oxide.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To provide the assay industry with an alternative to litharge in order to reduce work exposure, disposal costs, and lead emissions.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1993 Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	The assay labs that have converted to bismuth oxide have seen their costs associated with meeting the lead standard drop substantially. They have also seen a decrease in worker lead exposure.
Programme results	
What are the results of the monitoring programme(s) described?	See above.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Asarco has sponsored seminars on the use of bismuth oxide as an assay alternative.

Further information	
Who can be contacted for more information?	Dr M.G. King Technical Services Center ASARCO Inc 3422 South 700 West Salt Lake City, Utah 84119-4191 Telephone: + 1 (801) 263 5215 Facsimile: + 1 (801) 261 5194 E-mail: mking@asarco.com

ENVIRONMENAL MANAGEMENT SYSTEMS **Missouri** **State Implementation Plan (Lead SIP) – Smelter** **Water Treatment Plant Upgrades – Smelter** **Additional diking to capture stormwater – Smelter** **Groundwater upgrade and sealing of concrete surfaces – Smelter** **Biotreatment Plant – West Fork Mine** **Additional Stormwater Controls - Sweetwater Mine** **(Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)**	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Since 1992, the smelter has installed additional controls at a cost of approximately $20 million to control air emissions. Additional monitoring was implemented and is continuing. In 1993, and again in 1997, the plant water treatment system was upgraded to reduce metals in the effluent. Additional monitoring was implemented to track results. Additional diking was installed to prevent stormwater egress to surface waters within the smelter plant site. Concrete surfaces within the smelter site were either replaced or sealed to maintain surface integrity. The biotreatment plant at the West Fork mine was constructed to treat mine water to meet discharge standards. The Sweetwater storm water project is intended to ensure capture of all storm water.

Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The goal of the Lead SIP programme was to reduce lead air emissions to a quarterly average of less than 1.5 μg/m^3 of lead in ambient air near the smelter. Air emissions have met this standard for the past six quarters. The goal of improvements in the water treatment systems was to reduce metals released in the effluent. All required standards are being met. The additional diking has prevented potentially contaminated stormwater from entering surface waters within the smelter plant site. The goal of the concrete replacement/sealing was to reduce the potential of smelter plant process/stormwater to reach groundwater. The construction of the biotreatment plant allowed treatment of mine wastewater to meet discharge standards. The discharge has met and continues to meet standards. The addition of additional stormwater controls at the Sweetwater mine will ensure that all stormwater is captured. Construction in process.

Duration	
What year did the project begin and what year did it end (or is it expected to end)?	Lead SIP: 1992. Full implementation of controls - 1997. Continuing basis. This is part of normal operation of the plant. WTP upgrades: 1993, 1997. WTP effluent continues to meet permit limits. Additional diking: 1996-97. Diking is periodically inspected and repaired/upgraded as needed. Stormwater is contained on plant site. Concrete repair/upgrade: 1996-present. Project continuing. Biotreatment plant: 1996. Will continue in service as part of normal operations. Sweetwater stormwater project: 1997-98. Will be part of plant infrastructure and in use at start of normal operations.

Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	No
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Continuous monitoring, recording and periodic reporting of results
Programme results	
What are the results of the monitoring programme(s) described?	In full compliance with applicable standards and regulations
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	NA

Further information	
Who can be contacted for more information?	Glen Lubbers Telephone: + 1 (573) 546-7492 Facsimile: + 1 (573) 546-2674 E-mail: glubbers@asarco.com

ENVIRONMENAL MANAGEMENT SYSTEMS East Helena Smelter (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Lead State Implementation Plan (SIP) project involved enclosing buildings, better management of process materials, construction of baghouses, reducing road dust emissions, and process improvements all designed to better capture lead emissions.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Reduce plant sources to achieve national ambient air quality standard (NAAQS) for lead.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1994 1996
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes. Dusts collected in baghouses are returned to the process for metal recovery.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Quarterly reports on achieving the requirements of the SIP are submitted to the state. Hi-vol ambient air monitoring is being performed.
Programme results	
What are the results of the monitoring programme(s) described?	All components for reporting under the SIP are being met. The NAAQS for lead has been attained.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	

ENVIRONMENAL MANAGEMENT SYSTEMS East Helena (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Paving and concrete placement on roadways and open areas throughout the plant.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Paving and concreting roadways and open areas provides for enhanced cleanup of material spillage and prevents stormwater infiltration.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1992 Ongoing to date
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Solids removed from paved and concrete areas are returned to the process for metal recovery.
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Groundwater monitoring wells and ambient hi-vol monitors.

Programme results	
What are the results of the monitoring programme(s) described?	The NAAQS for lead has been attained. Groundwater quality has improved.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	

ENVIRONMENAL MANAGEMENT SYSTEMS East Helena (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	High density sludge (HDS) water treatment improvements designed to meet future NPDES permit limits.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	New lead NPDES limit will become effective in November 1998. Improvements in the HDS treatment technology (or an alternative treatment technology) will be necessary to meet these limits.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1996 Ongoing to date.
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, solids from the treatment plant will continue to be smelted for metal recovery.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NPDES limits (final) are not yet in effect.
Programme results	
What are the results of the monitoring programme(s) described?	NA for future NPDES limits. Current (interim) limit is being met.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	

ENVIRONMENAL MANAGEMENT SYSTEMS East Helena (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	CERCLA process pond record of decision (ROD). The ROD addressed removal of surface impoundments (replaced with above ground tanks), removal of surface impoundment solids, and replacement of certain water conveying/treatment processes.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Eliminate potential sources of metals to the groundwater. Containing plant water in above ground tanks accomplished this goal. Removing metal accumulated sediment accomplished this goal.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	December 1990 Ongoing to date
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Solids are returned to the smelting process for metal recovery, in both the existing tanks and in remediated surface impoundments.
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	A network of on-site and off-site groundwater monitoring wells are located throughout the area. Monitoring these wells is performed semi-annually to assess progress of remedial action.

Programme results	
What are the results of the monitoring programme(s) described?	Groundwater quality has improved.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	

COMPANY/COMMUNITY PARTNERSHIP East Helena (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	CERCLA residential soils removal project. Residential soils are removed if soil lead is >1000 ppm and a child ≤ 6 years of age lives at residence. Clean top soil brought in to replace removed soils.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Elevated lead soil is removed as an exposure route. The success of the programme is measured through blood lead testing in the community.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1991 Continues to date
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	No
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Blood lead testing of community

Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	

COMPANY/COMMUNITY PARTNERSHIP East Helena (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Community blood lead programme. This programme is funded by ASARCO and administered by the Lewis and Clark County Health Department (LCCHD).
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Blood lead levels in children < 6 years of age are monitored. Intervention, community education and environmental assessments are being conducted. Residential soil removal is being co-ordinated by the community through LCCHD.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1975 Continues to date
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	LCCDH continually reviews existing data and actively solicits ongoing participation. Quarterly reports to the community are prepared.

Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Lead paint removal projects are being implemented through LCCHD to further reduce exposures to the community.
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	

ENVIRONMENTAL MANAGEMENT SYSTEM East Helena (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Construction of a sanitary sewer treatment facility to eliminate all sanitary wastewater discharge to the municipal portion.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Sanitary sewer discharge is routed to a treatment plant for biological treatment. The sanitary sewer treatment plant effluent is routed to another water treatment plant for metals treatment and is discharged via a NPDES permit.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1997 1998
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, water is treated while solids are disposed of in off-site landfill.
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Line from East Helena plant to municipal POTW has been disconnected. Water from metals treatment plant is being monitored under NPDES requirements

Programme results	
What are the results of the monitoring programme(s) described?	NPDES permit limits are being met.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	

ENVIRONMENTAL MANAGEMENT SYSTEM East Helena (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Installation of a stormwater collection facility to eliminate stormwater release from the East Helena plant.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Stormwater releases have been controlled in above-ground tanks. Collected stormwater is routed to a water treatment plant and discharged via a NPDES permit.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1997 1998
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, solids collected in the stormwater collection tanks will be returned to the smelting process for recovery of metals.
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	If stormwater is contained in tanks, exposure to it is eliminated. Discharge from treatment plant is being monitored under NPDES requirements.

Programme results	
What are the results of the monitoring programme(s) described?	All stormwater is being collected. NPDES permit limits are being met.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	Jon Nickel Mail Box 1230 East Helena Montana 59635 Telephone: + 1 (406) 227 7191 Facsimile: + 1 (406) 227 4008 E-mail: jnickel@asarco.com

ENVIRONMENTAL MANAGEMENT SYSTEM Omaha Reduction of lead discharges to surface waters (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Implementation of all the provisions of a Nebraska NPDES permit. This includes installation of a wastewater collection system and subsequent treatment of the wastewaters prior to discharging. It also includes the development and implementation of a Stormwater Management Plan.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce lead discharges from the plant to levels specified in the NPDES permit.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1995 1996
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	This activity included the installation of a new collection system and wastewater treatment plant to collect, store and treat wastewater prior to discharging to the surface waters of Nebraska.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Quarterly discharge monitoring reports are submitted to the Nebraska Department of Environmental Quality to report compliance with the NPDES permit.
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Plant shut down and plant site will go through demolition, remediation, and conversion to a public green space.
Related government programmes	
Describe any government initiative in relation to this activity.	Clean Water Act. Nebraska NPDES programme.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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ENVIRONMENTAL MANAGEMENT SYSTEM Omaha Reduce airborne lead concentrations at the plant property line (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Implementation of a control strategy to install control measures on lead emission point sources throughout the plant in accordance with a Nebraska State Implementation Plan for Lead.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Reduce lead emissions from point sources to a level that would result in compliance with the National Ambient Air Standard for lead.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1993 1997
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	All control measures implemented included activities to increase the collection and recycling of lead through the installation of equipment to increase the capture of lead emissions or by shutting down operations that result in emission source points.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Compliance monitors are installed on the property line and operated every other day to obtain a quarterly average.
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Plant shut down in 1997.
Related government programmes	
Describe any government initiative in relation to this activity.	National Ambient Air Quality Standards State Implementation Plan for Lead
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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Britannia Refined Metals*
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure	
What is the frequency of sampling? What methods are used for blood lead analysis? Are other markers of exposure monitored? If yes, please describe.	Blood lead < 30 µg/dL every six months < 31-40 every three months < 40 every month Atomic adsorption spectrometry Zinc protoporphyrin haemoglobin
Occupational Exposure Levels	
Males Number of exposed workers Average blood lead levels Range of blood lead levels Females Number of exposed workers Average blood lead levels Range of blood lead levels	276 25.3 5-44 3 10 6-13 These levels show a strong downward trend in the 1990s and reflect a strong focus on health and safety in the workplace.

* Britannia Refined Metals and Britannia Zinc are sister companies.

General Population Exposure Levels		
Adult males	Number of exposed workers Average blood lead levels Range of blood lead levels	
Adult females	Number of exposed workers Average blood lead levels Range of blood lead levels	
Children	Number of exposed workers Average blood lead levels Range of blood lead levels	
How do these values compare to those distant from your facility?		

Environmental Monitoring Programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available. Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead? What actions or changes are proposed to further reduce exposure levels?	<u>Air</u> Boundary lead in air 0.81 μg/m^3 1996/7 0.48 μg/m^3 1997/8 <u>Water</u> Water trade effluent discharge 99.8 kg Pb 1996/7 62.1 kg Pb 1997/8 A reduction in boundary lead in air figures has been achieved through improved environmental management practices, such as: - treatment of dusty materials to produce non-dusty by-products - reduction in external storage of lead bearing residues - increase in covered storage areas A decrease in the quantity of lead discharged as trade effluent has been achieved by improving process control within the effluent treatment plant. Further reduction in quantity of externally stored materials with an increase in treatment of dusty by-products to produce non-dusty ones. Introduction of a waste minimisation programme. More environmental awareness training amongst employees. Britannia are progressing towards completion of 150 14001 accreditations, with its strong emphasis on continuous improvement. Environmental management is a key measure of our success.

Britannia Zinc*
Part II: Description of Distinct Activities

OCCUPATIONAL EXPOSURE Lead in blood reduction programme (known as "PLB 2000") (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Voluntary implementation of a lead in blood reduction programme.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	All employees with blood lead less than 40 µg/dL by the year 2000.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1996 2000
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	No

* Britannia Refined Metals and Britannia Zinc are sister companies.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Lead in blood medical surveillance.
Programme results	
What are the results of the monitoring programme(s) described?	1996 - 202 employees with lead in blood > 40 µg/dL Nov 1998 - 48 employees with lead in blood > 40 µg/dL
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Further education of workforce, improved housekeeping, new ventilation systems to reduce exposure. Improvements to RPE.
Related government programmes	
Describe any government initiative in relation to this activity.	1998 - Control of lead at work regulations 2000? - Review of regulations
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Briefing of company doctors by LDA on the new CLAW regulations 1998.

Further information	
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Battery Council International
Part II: Description of Distinct Activities

OCCUPATIONAL EXPOSURE Voluntary Occupational Safety and Health Programme	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	43 companies have volunteered for a five-year programme to lower the blood lead removal and return levels for their workers. (This programme is in conjunction with the Lead Industries Association.)
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce lead exposure and blood lead levels.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1997 2001
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Annual data collection and reporting
Programme results	
What are the results of the monitoring programme(s) described?	In 1997, 24 more workers were removed from the workplace and 12% less had blood lead levels above 40 µg/dL as compared to 1996.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Continuation of the programme
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	NA

Further information	
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RECYCLING	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	BCI members actively promote and participate in lead battery collection and recycling programmes.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To collect and recycle 100% of spent lead-acid batteries.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1989 Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes. The programme is based upon an economically sound collection and recycling infrastructure. Spent lead-acid batteries are collected through the distribution system in reverse - from consumer to retailer - to manufacturer to secondary smelter.
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	The BCI Recycling Rate Study. Every year BCI provides an in-depth study and report on lead-acid battery collection and recycling in the United States.

Programme results	
What are the results of the monitoring programme(s) described?	Since 1990, the average recycling rate for lead-acid batteries – the lead available from lead-acid batteries – has been over 94%.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Continued promotion of lead-acid battery collection and recycling.
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Promotion of lead-acid battery collection and recycling.
Further information	
Who can be contacted for more information?	Edward Craft Battery Council International 401 North Michigan Avenue Chicago, Illinois 60611 Telephone: + 1 312/644-6610 Facsimile: + 1 312/527-6636

OCCUPATIONAL EXPOSURE Worker Protection Survey	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	BCI provides information to secondary smelting and battery manufacturing companies to be used in worker education efforts for lead exposure reduction. It surveys those companies to determine whether lead exposures are being reduced.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce worker lead exposure and take-home exposures.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Regular air and blood lead testing at facilities by affected companies and reporting on a company/industry basis of the results of this monitoring.
Programme results	
What are the results of the monitoring programme(s) described?	Declining blood lead levels.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Continued distribution of materials and survey of companies.
Related government programmes	
Describe any government initiative in relation to this activity.	Federal Occupational Safety and Health Administration (OSHA) requires worker education in certain lead facilities and the Environmental Protection Agency promotes efforts to lower take-home exposures.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	NA

Further information	
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INFORMATION EXCHANGE/OCCUPATIONAL EXPOSURE Environmental, Safety and Health Seminar	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	BCI sponsors a two-day programme to discuss the latest advances in regard to environmental engineering and safety and health issues.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Provide up-to-date information on occupational health and environmental protection.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Regular monitoring of worker blood lead levels and lead releases to the environment.
Programme results	
What are the results of the monitoring programme(s) described?	Overall levels have been declining.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	Federal Occupational Safety and Health Administration, Environmental Protection Agency and state regulatory requirements.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Continued exposure and release reduction efforts.

Further information	
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Cominco Ltd (Canada)
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling?		Depending on plant and Pb_B experience, frequency varies from 1-2 months to 6 and 12 months.
What methods are used for blood lead analysis?		Atomic absorption analysis of various blood samples
Are other markers of exposure monitored? If yes, please describe.		Continuous work area monitoring. Periodic hygiene monitoring for air quality, both area and personal monitors
Occupational Exposure Levels		
Males	Number of exposed workers Average blood lead levels Range of blood lead levels	
Females	Number of exposed workers Average blood lead levels Range of blood lead levels	
General Population Exposure Levels		
Adult males	Number of exposed workers Average blood lead levels Range of blood lead levels	Blood lead drops off rapidly with distance from smelter.
Adult females	Number of exposed workers Average blood lead levels Range of blood lead levels	
Children	Number of exposed workers Average blood lead levels Range of blood lead levels	
How do these values compare to those distant from your facility?		

Environmental Monitoring Programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available. Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead?	Soil: Geometric mean in Trail area ~ 750 ppm
What actions or changes are proposed to further reduce exposure levels?	New Kivcet smelter is currently in start-up phase. Residues are processed through lead smelter. Smelter slag is processed through slag fuming, with oxide fume recycled to zinc operation. Tail slag is utilised in cement manufacture.

Cominco Ltd
Part II: Description of Distinct Activities

RECYCLING Recycling of Lead Product Materials	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Processing of scrap battery materials and other lead wastes from other sources. The battery system includes a government organized and regulated collection system; an off-site independent breaker operation that provides Cominco Ltd. with lead metallics, paste and waste acid; and our smelter operation to reprocess the lead.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Process waste batteries collected in British Columbia and from elsewhere. Approximately 25,000 tonnes per year processed. Where technically and economically feasible and environmentally acceptable, process other lead-bearing wastes, such as assay cupels, slags, drosses and sludges.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes. Province of B.C. has set up a province-wide collection system with a transportation subsidy funded from a battery levy fee of $5.00. Also a rolling arrangement whereby battery manufacturers recycle scrap batteries to breaker and Cominco supplies lead to manufacturer.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	Government established Special Waste Regulation that defined scrap batteries as waste. Also established collection, manifesting and permitting process.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Described earlier.

Further information	
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COMPANY/COMMUNITY PARTNERSHIP Historic and Community Exposure Abatement	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Co-operative and comprehensive programme to manage exposure risk and develop risk reduction remedial strategy through a multi-stakeholder, community-based task force process.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1989 2000
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	No

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	B.C. Ministries of Environment and Health are both active participants and contribute funding to the programme.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	WCB has incorporated the HPP concept into their regulations applicable to all lead industry situations in British Columbia.

Further information	
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TECHNOLOGY/PRODUCT DEVELOPMENT Limiting Air Emissions from Major Point Sources	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	New lead smelting technology: Kivcet smelter. Materials management: covering stockpiles, materials holding upgrade, vehicle washing facility. Environmental Management System (EMS) based on ISO 14001 process.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Reduce stack emissions of lead by 75% (achieved). Reduce fugitive dust and off-site tracking. EMS provides systematic approach to continuous improvement and corrective action.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	New smelter 1997 Materials management 1990 EMS 1995 All ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Not directly

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Regular monitoring of stack sources. Regular monitoring of lead in air at 10 sites in surrounding environment. EMS is subject to periodic audit and review.
Programme results	
What are the results of the monitoring programme(s) described?	Achieved 75% reduction in air emissions with corresponding reduction in lead in air concentrations (average now <0.5 mg/m^3).
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	EMS will continue.
Related government programmes	
Describe any government initiative in relation to this activity.	Provincial government Ministry of Environment limits lead emissions by permit.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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OCCUPATIONAL EXPOSURE Reduction of Lead in Occupational Setting	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Lead exposure management through the Trail Operation's Health Protection Programme (HPP). Technology change with new Kivcet lead smelter, drossing and slag fuming. Progressive reduction in blood lead precautionary removal levels.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Air lead exposure <0.05 mg/m^3. Blood lead level reduced from 60 μg/dL to around 50, with 45 pending by 1999.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	HPP 1995 New smelter 1997 PbB reduction 1990 All ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	No

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Monitoring continuously (weekly averages) at many sites in all lead exposure work areas. Periodic hygiene sampling in work area and personal samplers. Blood lead monitoring of all employees in lead exposure work areas.
Programme results	
What are the results of the monitoring programme(s) described?	Decreasing trends in air lead and blood lead results.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	HPP is the basis for risk management
Related government programmes	
Describe any government initiative in relation to this activity.	Workers' Compensation Board (WCB) sets air lead and blood lead limits. The WCB also worked co-operatively with the Company and Union in developing the HPP.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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Cominco Ltd. is a sponsor of the International Lead Management Centre (ILMC)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Voluntary Industry Lead Risk Management Project
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To enhance the sound management of lead production, use, recycling and disposal
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1997 Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	

Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Yes
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	Walter J. Kuit Manager, Environmental Affairs Cominco Ltd. 500-200 Burrard Street Vancouver, BC V6C 3L7 Telephone: + 1 (604) 685-3011 Facsimile: + 1 (604) 685-3019 E-mail: walter.kuit@cominco.com

Coalition for Safe Ceramic Ware
Part II: Description of Distinct Activities

PERFORMANCE STANDARDS FDA Compliance and Consumer Commitment Programme (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	The programme is a set of quality assurance/quality control principles designed to insure that the ware manufactured in accordance therewith will comply with the US Food and Drug Administration's regulatory limits for leachable lead and cadmium in tableware. Adoption of the programme is a condition of membership in the CSC.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The programme is designed to insure that the subscribing companies' tableware products comply with the FDA's regulatory guidelines. This, in turn, is intended to give the regulatory agency, retailers, and consumers confidence in the safety of the products.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1994 Ongoing.
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA
Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	The programme has been adopted by each of the CSC's member companies.

Further information	
Who can be contacted for more information?	Michael R. Kershow Collier, Shannon, Rill and Scott, PLLC 3050 K Street, NW Washington, D.C. 20007 Telephone: + 1 (202) 342 8580 Facsimile: + 1 (202) 342 8451 E-mail: Mkershow@colshan.com

PERFORMANCE STANDARDS Harmonization of International Standards (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	The CSC has, on various fronts, worked to achieve harmonization of national and international standards for lead release. For example, members of the CSC have worked with the International Organization for Standardization (ISO) to see that the ISO's latest version of its international standard ISO 6486 is consistent with the US Food and Drug Administration's current regulatory limits. Similarly, the CSC urged Health Canada to adopt new ceramics regulations consistent with those of FDA.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The adoption around the world of harmonized standards for lead release that are protective of public health, and attainable by the industry using state-of-the-art technology and production controls, helps facilitate international trade, encourages the adoption by industry of "best practice", and reduces the burden on regulators by reducing the likelihood that imported ware will not comply with the importing nation's regulatory limits.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1992 NA
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA
Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	The CSC will continue to promote harmonization of national and international lead release standards.
Related government programmes	
Describe any government initiative in relation to this activity.	As noted, Health Canada was persuaded to adopt new lead leading standards modeled on FDA's .
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	As noted, the ISO is considering the adoption of a new international standard modeled on FDA's.

Further information	
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INFORMATION EXCHANGE Technical Exchange Conferences (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	In October 1995, the CSC sponsored, in conjunction with the Society of Glass and Ceramic Decorators, a technical exchange conference at which industry speakers described unleaded glaze and decoration systems, manufacturing and process controls, product testing and other lead reduction efforts. The papers were subsequently shared with the US Food and Drug Administration.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Promote adoption throughout the industry of state-of-the-art technologies and production controls in order to reduce leachable lead levels.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1995 NA
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	The CSC will sponsor future technical exchange conferences as warranted.
Programme results	
What are the results of the monitoring programme(s) described?	It is hoped that individual companies adopted process improvements as a result of the conference.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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EDUCATION Development and Distribution of Consumer Education Materials (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	In early 1994, the CSC developed and distributed to retailers a brochure entitled "The Consumer's Guide to Safety, Beauty and Satisfaction in Dinnerware." Among other things, the brochure describes how to minimize the potential for lead release from dinnerware and how to obtain test values for particular patterns. The brochure also describes the CSC's "FDA Compliance and Consumer Commitment Program." Copies of the brochure were shared with the US FDA.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To provide retailers with information that can be used to respond to consumer inquiries.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1994 1994
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA
Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Further educational materials will be developed as needed.
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Individual CSC member companies have distributed the brochure to their retail accounts.

Further information	
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PERFORMANCE STANDARDS Voluntary Standard for Leachable Lead in Lip-Rim Decorations (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	The CSC recently decided to adopt a voluntary standard for leachable lead in the lip-rim area of ceramic cups and mugs of 4 ppm. This standard has also been endorsed by the Society of Glass and Ceramic Decorators.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The objective of the voluntary standard is to ensure that leachable lead in the lip-rim area of cups and mugs is appropriately limited.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1998 NA
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA

Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	None at present, although the CSC has been discussing the issue with the US FDA.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	NA
Further information	
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The Doe Run Company
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling?		One month to one year
What methods are used for blood lead analysis?		Atomic absorption
Are other markers of exposure monitored? If yes, please describe.		US lead standard, Peruvian standard
Occupational Exposure Levels		
Males	Number of exposed workers	400 (Missouri smelters)
	Average blood lead levels	26
	Range of blood lead levels	2-50 (95% less than 50 µg/dL)
Females	Number of exposed workers	5 (Missouri smelters)
	Average blood lead levels	26
	Range of blood lead levels	

General Population Exposure Levels	
Adult males Number of exposed workers	
Average blood lead levels	
Range of blood lead levels	
Adult females Number of exposed workers	
Average blood lead levels	
Range of blood lead levels	
	(1992)
Children Number of exposed workers	80
Average blood lead levels	10
Range of blood lead levels	0-20
How do these values compare to those distant from your facility?	Higher closer to smelter.
Environmental Monitoring programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available.	Vary with distance from smelter and improvements over time.
Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead?	Yes, we have a proactive programme of air emission reduction, soil replacement, education and home lead stabilisation. Average levels have fallen – 1975 - 19.1, 1985 - 13.2, 1992 - 10.8, 1998-? (average in Missouri smelters).
What actions or changes are proposed to further reduce exposure levels?	Continuous management improvement and capital investment programme.

The Doe Run Company
Part II: Description of Distinct Activities

RECYCLING 100,000 ton recycling plant built in 1990 to recycle lead-bearing materials at primary plant (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Entered recycling business in 1990 to respond to growing market for such materials. Rebuilt primary lead plant into recycling plant.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Business goals: revenue and profit, meeting a need for recycling based on cultural changes in voluntary battery and other recycling.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1990 Sustainable business
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	We monitor financial objectives, cost, % recovery of feed, air lead, water emissions, waste inventory, blood lead and cadmium levels.
Programme results	
What are the results of the monitoring programme(s) described?	Continuous improvement.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Ongoing part of our business.
Related government programmes	
Describe any government initiative in relation to this activity.	We have permits.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
Who can be contacted for more information?	Dan Vornberg V.P. Environmental Affairs The Doe Run Company 881 Main Street Herculaneum, Missouri 63048 Telephone: + 1 (314) 933 3134 Facsimile: + 1 (314) 933 3150 E-mail: greenbrown@aol.com

Voluntary Reduction of Lead in Smelter Slag at Herculaneum Lead Smelter Under SU EPA 33-50 Programme (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Reduced lead and zinc losses to slag through process improvements.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce the amount of heavy metals loss in slag.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1988 1997
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Waste minimisation

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Annual measurement of slag generation and slag chemistry.
Programme results	
What are the results of the monitoring programme(s) described?	Over 50% reduction of metals contained in slag.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Study additional ways to recover metals through innovations in slag fuming.
Related government programmes	
Describe any government initiative in relation to this activity.	We participated in US EPA's 33-50 programme.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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Elf Atochem
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling? What methods are used for blood lead analysis? Are other markers of exposure monitored? If yes, please describe.		Twice a year (usually), average result 15-20 µg/dL in blood.
Occupational Exposure Levels		
Males	Number of exposed workers Average blood lead levels Range of blood lead levels	
Females	Number of exposed workers Average blood lead levels Range of blood lead levels	

General Population Exposure Levels		
Adult males	Number of exposed workers Average blood lead levels Range of blood lead levels	
Adult females	Number of exposed workers Average blood lead levels Range of blood lead levels	
Children	Number of exposed workers Average blood lead levels Range of blood lead levels	
How do these values compare to those distant from your facility?		
Environmental Monitoring programmes		
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available.		<u>Air</u> Sampling of air in different areas of the plant (mixing operations weighing devices, etc.), then dosing lead usually by atomic absorption spectroscopy.
Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead?		The average values were between 30 and 500 μ/m^3 in the period 1992-94. They were in the range 30-250 μ/m^3 for the period 1995-97.
What actions or changes are proposed to further reduce exposure levels?		Improve the venting equipment closest to the mixing area. Reduce the number of “manual weighing operations”. Use “concentrates” instead of pure lead compounds.

Elf Atochem
Part II: Description of Distinct Activities

RECYCLING (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, our company promoted an organisaton devoted to the collection of old parts from “end of life vehicles”. Amount of auto vinyl recycled in 1997 was 1800 tonnes.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	"Progress plans" which are operated in each industrial location in Europe.
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	Hanni Rosenbaum Business and Industry Advisory Committee to the OECD (BIAC) Paris, France Telephone: + 33 (01) 42 30 09 60 Facsimile: + 33 (01) 42 88 78 38

F.X. Nachtmann GmbH
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling?		Once a year
What methods are used for blood lead analysis?		Atomic absorption spectrometry (AAS) performed by an accredited independent test laboratory
Are other markers of exposure monitored? If yes, please describe.		Nickel
Occupational Exposure Levels		
Males	Number of exposed workers	50
	Average blood lead levels	200 µg/l blood
	Range of blood lead levels	110-420 µg/l blood
Females	Number of exposed workers	3
	Average blood lead levels	150 µg/l blood
	Range of blood lead levels	90-220 µg/l blood

General Population Exposure Levels		
Adult males	Number of exposed workers Average blood lead levels Range of blood lead levels	No
Adult females	Number of exposed workers Average blood lead levels Range of blood lead levels	
Children	Number of exposed workers Average blood lead levels Range of blood lead levels	
How do these values compare to those distant from your facility?		
Environmental Monitoring Programmes		
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available.		<u>Air</u> < 0.5 mg/m^3 (measured in the stack of the furnace) <u>Water</u> < 0.3 mg/l (measured before the entry into the urban canalization)
Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead?		The values have barely changed, especially regarding air emissions, because they are at low levels far below governmental regulations anyway.
What actions or changes are proposed to further reduce exposure levels?		There is no reason to plan further action because of low values.

F.X. Nachtmann GmbH
Part II: Description of Distinct Activities

RECYCLING Waste Melting Activity (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	The main element of this activity is the melting and recycling of lead-containing waste, such as residues from filter or cutting sludge, which have compositions similar to glass batch.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The main target is the conversion of toxic, heavy metal-containing waste into inert glass products and to relieve environment.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	January 1997 No end planned
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, as described under Objectives

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA
Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Future activities may be the creation of more healthy working conditions by using closed systems for batch addition and feeder technique, and by replacing gas-fired furnaces by electrical.
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	NA
Further information	
Who can be contacted for more information?	

Glassexport Co Ltd
Part II: Description of Distinct Activities

Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	NA for Glassexport itself, but Glassexport's suppliers might have; in that context, they might be in liaison with the Ministry of Environment.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	See below
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	See below

Further information	
Who can be contacted for more information?	Josef Molata Glassexport Co. Ltd. Tr. 1. máje 52 461 74 Liberec Czech Republic Telephone: + 420 48 5235559 Facsimile: + 420 48 5100162/5101214 E-mail: glassexport@lbc.pvtnet.cz Since Glassexport is not a manufacturer and in many instances is declared as the supplier of the goods, it always requires official certificates confirming agreement of the product in question with technical standards, documents and legal regulations in force. These certificates are issued only by the State Testing Laboratory of the Glass Institute, which is controlled by the government of the Czech Republic.

Hadeland Glassverk
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling?		Minimum two controls per person per year
What methods are used for blood lead analysis?		Yes, quarterly measurements of dust emissions to air from the melting process.
Are other markers of exposure monitored? If yes, please describe.		Frequent sample testing of dust.
Occupational Exposure Levels		
Males	Number of exposed workers	95
	Average blood lead levels	1.24 B-Pb wmol/1/1
	Range of blood lead levels	.065-2.24
Females	Number of exposed workers	7
	Average blood lead levels	0.58 Pb wmol/1/1
	Range of blood lead levels	0.23-0.79

General Population Exposure Levels		
Adult males	Number of exposed workers Average blood lead levels Range of blood lead levels	No
Adult females	Number of exposed workers Average blood lead levels Range of blood lead levels	
Children	Number of exposed workers Average blood lead levels Range of blood lead levels	
How do these values compare to those distant from your facility?		

Environmental Monitoring Programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available. Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead? What actions or changes are proposed to further reduce exposure levels?	Air 1. KUART-98 : 0.11 kgPb/DØGN (24 hours) Background levels NA 1. KUART-96 : 0.58 KGPb/DØGN (24 hours) 1. KUART-97 : 0.54 KGPb/DØGN (24 hours) 1. KUART-98 : 0.11 KGPb/DØGN (24 hours) • Further statistics not available • Reduction of lead used • Reduce areas of lead exposures • Improve ventilation • Improve personal hygiene

International Crystal Federation
Part II: Description of Distinct Activities

PERFORMANCE STANDARDS Promulgation of Voluntary Performance Standards and Testing Programme (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Beginning in 1991, the ICF adopted voluntary lead release limits for its members' products that were only a fraction of those contained in ISO 7086. These standards were subsequently reduced even further in 1992 and 1994. In 1994, the Federation adopted a "Compliance and Consumer Commitment Programme," a set of quality assurance/quality control principles designed to insure compliance with the voluntary standards. Subscription to this programme is a condition of membership in the ICF. In 1998, the association decided to adopt an internal testing programme to confirm members' compliance with the release limits.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The voluntary standards are intended to reduce potential consumer exposure to lead through the use of crystal tableware manufactured by ICF members.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1991 NA

Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	As noted, a testing programme will be implemented in 1998 in order to monitor compliance with the standards. Random testing of ware broadly representative of that available on major world markets will be conducted on an annual basis.
Programme results	
What are the results of the monitoring programme(s) described?	The testing programme is still in the process of being implemented.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	ISO TC 166 has adopted the ICF's current standards as the basis for its ongoing revision of ISO 7086. It is hoped that formal adoption of this more stringent international standard will contribute to even greater reductions in potential lead exposure.

Further information	
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INFORMATION EXCHANGE Technical Exchange Conferences (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Since 1991, the ICF has sponsored ten technical exchange conferences dedicated to sharing information on techniques for reducing lead release from crystal, and on methods for reducing environmental and workplace exposure to lead. The conferences have been widely attended by representatives of firms from around the world, including firms that are not members of the association.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The conferences are designed to disseminate knowledge of state-of-art manufacturing methods and controls aimed at reducing potential lead exposures attributable to the manufacture and use of crystal tableware articles. It is believed that the conferences have contributed to significant reductions in leaching rates in finished products and to improvements in factories' workplace and environmental remediation programmes.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1991 NA (ongoing)
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Collection and recycling of crystal tableware articles, once sold, is not practicable, as the articles are seldom disposed of. In the factory, damaged crystal glass is regularly reduced to cullet and recycled.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA
Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	The ICF intends to continue its programme of technical exchange of conferences.
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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EDUCATION Consumer Education (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	The ICF has developed and distributed a consumer-oriented “care and use” brochure for crystal tableware and servingware articles.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The brochure is intended to provide consumers with information on how to care for and use crystal tableware and servingware in such a way as to minimize the potential for lead release.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1994 NA (ongoing)
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA

Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Development of consumer education materials will continue, as needed.
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
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International Lead Management Center (ILMC)
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure	
What is the frequency of sampling?	ILMC assists companies in complying with their government regulations. WHO guidelines are the default.
What methods are used for blood lead analysis?	ILMC recommends graphite furnace AA or ASV.
Are other markers of exposure monitored? If yes, please describe.	Secondary monitoring of ZPP is recommended.
Occupational Exposure Levels	
Males Number of exposed workers Average blood lead levels Range of blood lead levels Females Number of exposed workers Average blood lead levels Range of blood lead levels	NA

General Population Exposure Levels	
Adult males Number of exposed workers Average blood lead levels Range of blood lead levels Adult females Number of exposed workers Average blood lead levels Range of blood lead levels Children Number of exposed workers Average blood lead levels Range of blood lead levels How do these values compare to those distant from your facility?	ILMC assists in the design and implementation of such programmes.
Environmental Monitoring Programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available. Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead? What actions or changes are proposed to further reduce exposure levels?	Lead levels in air, water effluent and soil are monitored. Such monitoring is a routine component of ILMC pilot programmes in which the environmental performance of industrial facilities is evaluated. ILMC assists companies in the development of Environmental Management Systems.

International Lead Management Center
Part II: Description of Distinct Activities

Phase-out of Lead in Gasoline	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Many countries are attempting to establish an adequate policy to reduce the use of lead in gasoline. ILMC participated in consultations convened by UNEP and OECD in December 1996 on this issue and, as a consequence, is establishing an information clearinghouse on information pertaining to lead in gasoline. Issue papers concerning different phase-out strategies have been prepared with ILMC funding through UNEP and OECD and will be published in 1999. An annotated bibliography is in preparation to serve as a guide to technical resources. Information packages are also being made available regarding issues of engine technology, refinery technology, and fuel stocks.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	This activity promotes the development of policy to phase out the use of lead in gasoline.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1996 This is envisaged as a continuous activity.
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	A global "report card" is being prepared and will be continually updated to monitor the progress of countries in phasing out lead in gasoline. All aspects of ILMC activity are subjected to evaluation by an independent Policy Advisory Group.
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	The activity is ongoing as part of an OECD/UNEP consultative process.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	This activity has succeeded in producing co-operative interactions between the automotive, petroleum-producing, and gasoline additive industries to assist in the phase-out of lead in gasoline.

Further information	
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Safe Use of Lead in Ceramic Ware and Crystal Ware	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	ILMC is working with end-user associations in the development of technical dossiers and multiple manuals describing lead product applications and measures that can be taken to reduce opportunities for lead exposure to consumers and in the workplace. In conjunction with the International Crystal Federation, ILMC is working with the ISO Secretariat on preparing technical manuals describing options for reducing lead leachates from products. Operational "Best Practice Notes" are being prepared to manage occupational lead exposure. These notes are targeted towards the hobbiest, artisan, and small-scale industrial facilities.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Technical manuals will be published in 1999. ILMC is supporting efforts of the ISO Secretariat to develop a web site pertaining to safe use of ceramic ware and lead crystal.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1998 This will be an ongoing activity.
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	

Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Successful implementation of this approach to lead product issues will be followed by similar data collection, compilation and synthesis effort for lead shot, lead-soldered food cans, and lead in children's products.
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	Dr. Craig J. Boreiko ILMC PO Box 14189 Research Triangle Park, North Carolina 27709 USA Telephone: +1 (919) 361 2446 Facsimile: +1 (919) 361 1957 E-mail: cboreiko@ilmc.org

Guidelines for Secondary Lead Processing	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	A number of rapidly developing countries are encountering difficulties in establishing adequate secondary lead processing infrastructures for lead recycling. Issues include development and implementation of adequate performance guidelines, as well as issues posed by unregulated "backyard" battery reconditioners and recyclers. ILMC is working with the United Nations Development Programme and the United Nations Conference on Trade and Development to evaluate and resolve such problems in developing countries. In conjunction with UNEP, consideration is being given to the development of technical materials describing preferred recycling technologies and emission control strategies.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Development of policy guidelines and technology recommendations for recycling in developing countries.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1997-2000
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, as described above.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	
Programme results	
What are the results of the monitoring programme(s) described?	
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Successful implementation of this approach to lead product issues will be followed by similar data collection, compilation and synthesis effort for lead shot, lead-soldered food cans, and lead in children's products.
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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Mexico Pilot Programme	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	In conjunction with the Mexican Ministry for the Environment and the Mexican Chamber of Mines, a programme has been initiated to evaluate and improve as needed the environmental performance of lead-using and producing industries in Mexico. In December 1997, a Memorandum of Agreement was established between ILMC and the Government of Mexico to outline a voluntary framework of multi-stakeholder co-operation within the lead industry and the introduction of Best Practice Notes for reducing occupational, environmental and transboundary lead exposure.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Design of risk reduction regimes for individual industrial facilities as integrated pollution prevention and control programmes, including measures to improve the collection rates of used lead-acid batteries and the preparation of occupational health materials for medical officers and occupational health practitioners.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1996 - to be determined
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, see above

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	ILMC is supporting a government data collection project for the collation of environmental and population exposure levels. A preliminary monitoring programme is being implemented for lead oxide production facilities and the results are currently being evaluated.
Programme results	
What are the results of the monitoring programme(s) described?	This is a joint programme between government and industry.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Successful implementation of this approach to lead product issues will be followed by similar data collection, compilation and synthesis effort for lead shot, lead-soldered food cans, and lead in children's products.
Industry-related programmes.	
Describe any industry programme initiated in relation to this activity.	
Related government programmes	
Describe any government initiative in relation to this activity.	This is a joint programme between government and industry.

Further information	
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Philippine Pilot Programme	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	The Philippines is a rapidly industrialising non-Annex VII country with a profitable lead-acid battery recycling industry and a major automotive battery manufacturing sector exporting to over 40 countries. Demand for lead outstrips supply by some 40%, and the lead industry has so far filled this gap by importing used lead-acid batteries. Working with the Philippine government, UNCTAD, the Manila UNDP office and the Asian Institute of Management, the ILMC has initiated the preparation of a series of background papers that review the most suitable avenues for reducing adverse adjustment costs on the import of scrap batteries, including negative environmental, economic and social implications. The background papers cover: 1. the gradual transformation of the informal sector (battery reconditioners and cottage smelters) into an effective collection infrastructure for licensed modern lead smelters; 2. an assessment of the current environmental and occupational performance of the secondary lead industry and the requirements for an environmentally sound recycling sector; 3. an analysis of the likely consequences of the Basel ban amendment and the options for mitigating adjustment costs; 4. a review of the options for enhancing the environmental and occupational performance of the Philippine secondary level and battery manufacturing sectors, in tandem with improving their profitability.

Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	ILMC has been working with the major secondary recycler in the formal sector of the Philippines to assess current performance and explore improvement strategies to facilitate environmental improvements and reduce occupational and population exposures to lead. These include the optimization of currently employed recycling technology, improved hygiene regimes, energy efficiencies, process control mechanisms, and a new environmental management system supported by ISO 14001. The findings of UNCTAD's and ILMC's analytical work are to be presented in May 1999 at a government policy workshop jointly organised by UNCTAD, UNDP and the Asian Institute of Management. The workshop agenda will include improvement options for Philippine government and industry to consider, and outline infrastructure requirements necessary to raise battery collection rates and monitor environmental and population lead exposure.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1997-1999
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	See above

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	The major recycler in the Philippines has improved environmental performance and reduced occupational exposures. Assessments are ongoing for ISO 14001 accreditation.
Programme results	
What are the results of the monitoring programme(s) described?	ISO 14001 accreditation is anticipated for the principal recycling facility. The environmental performance of existing small regional recyclers has been assessed and the informal sector reviewed in a series of ILMC field studies. Information collected has been collated for government and serves as the basis for a draft improvement plan under review by Philippine government and industry.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	See above
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	See above

Further information	
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Russia Pilot Programme	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Since April of 1998, following attendance at the International Workshop on "Lead Pollution in the Russian Federation" in Moscow, ILMC has been working closely with the Center for Russian Environmental Policy (CREP) identifying possible industrial sectors for Pilot Programme activities. In 1997, the State Committee for Environmental Protection (SCEP) of the Russian Federation (RF) published a White Paper that characterised the problem of lead contamination and outlined the basis for an improvement programme that would target those pathways that represented the greatest threat to both human health and the environment. 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 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 modernisation 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 programmes, two projects in the non-ferrous smelting sector, one in the crystal industry, and another in either battery manufacturing or recycling. ILMC and CREP are still evaluating the full potential of Pilot Programme activity in the Russian Federation and will be engaged in a second field trip in early 1999.

Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The seven lead-acid battery manufacturing plants in the Russian Federation have been identified as a major point source of lead emissions. The three largest copper smelters east of the Ural Mountains account for 87% of industrial lead emissions to the atmosphere in the Federation. Nearly 80% of the Federation's primary lead ore is mined, smelted and refined in the province of Dalnegorsk on the east coast of Russia. The plant dates from the 1930s, is in a poor state of repair, and represents a potentially serious source of contamination. The Russian crystal industry produces some of the finest examples of this unique art form in the world. There is, however, a growing concern for the potential contamination of drinking water supplies by waste discarded from old crystal manufacturing factories. Despite the size of the Russian Federation and the growing number of vehicles, there is only one battery recycling plant in operation about 1500 miles east of Moscow. There is an obvious and urgent need to devise an effective strategy to create the necessary infrastructure to maximize spent battery collection rates and provide adequate battery recycling facilities. Towards the end of October last year, the ILMC and CREP signed a Memorandum of Understanding promoting the implementation of the first lead risk reduction Pilot Programme in the Russian battery manufacturing industrial sector. The initial environmental assessment is scheduled to be completed by the end of August 1999 at the JSC Baltelectro plant in St. Petersburg.

	The Pilot Programme objectives are: • to determine lead emissions from the battery plant and, where necessary, reduce the level of occupational and environmental lead exposure; • to introduce internationally recognized exposure methodologies and measurements to determine the levels of environmental contamination and population exposure; • to develop socio-economic and environmentally sound policy options and community-based intervention programmes in order to reduce lead exposure in the surrounding population. In conjunction with 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.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1998-2000
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, see above.
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	To be determined.

Programme results	
What are the results of the monitoring programme(s) described?	To be determined.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	See above.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	See above.
Further information	
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General Information Service	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	ILMC provides general support services to industry, governmental, academic and general public inquiries on issues of lead risk reduction. Services provided include arranging consultations with qualified experts, providing speakers for workshops and symposia, and access to ILMC information archives. An exchange visitor programme is also maintained, wherein individuals wishing to learn more about ILMC or specific lead risk reduction issues can visit ILMC or its member companies for training and/or consultation. Information regarding ILMC is also made available by a web site (www.ILMC.org), informational brochures, and regular newsletters. Publication of these materials presently occurs in English, Spanish and Russian editions. Through the ILMC, the international lead industry seeks to help fulfill the call of the OECD Ministerial Declaration on Lead for industry to provide assistance to national governments and industry in strengthening and improving their lead risk management activities.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The programme seeks to make the information resources and expertise of the international lead industry available to the international community upon request.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1996 This is an ongoing and continuous service.
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	See preceding activities.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	The activities of ILMC are overseen by an independent Policy Advisory Group composed of independent experts from government, academia and intergovernmental organisations. ILMC also files regular reports with the OECD Environment Directorate.
Programme results	
What are the results of the monitoring programme(s) described?	The Policy Advisory Group and OECD membership have encouraged and welcomed the activities of the ILMC. Pilot programme activities are continuously evaluated and new programmes initiated at the request of industry and government. Information resources are being expanded to include the full range of product issues identified in the OECD Ministerial Declaration. Additional information resources are developed to address issues (e.g. informal sector activities) that arise as a result of pilot programme activities.
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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Johnson Controls Battery Group, Inc.
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling? What methods are used for blood lead analysis? Are other markers of exposure monitored? If yes, please describe.		Monthly new employees for first three months. Monthly > 46 µg/dL and on MRP. Every 2 months > 30 µg/dL. Every 4 months > 25 µg/dL. Every 6 months < 25 µg/dL. Graphite furnace atomic absorption spectrophotometry. Yes, ZPP.
Occupational Exposure Levels		
Males	Number of exposed workers Average blood lead levels Range of blood lead levels	3,021 16.4 µg/dL 1-51
Females	Number of exposed workers Average blood lead levels Range of blood lead levels	676 13.0 µg/dL 1-36

General Population Exposure Levels		
Adult males	Number of exposed workers Average blood lead levels Range of blood lead levels	No
Adult females	Number of exposed workers Average blood lead levels Range of blood lead levels	
Children	Number of exposed workers Average blood lead levels Range of blood lead levels	
How do these values compare to those distant from your facility?		
Environmental Monitoring Programmes		
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available. Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead?	<u>Air</u> Air ≈ 1μg/m^3 Background air ≈ 0.05 μg/m^3 <u>Soil</u> Soil ≈ < 500 mg/kg Background soil ≈ 75 mg/kg <u>Water</u> Water ≈ 1 mg/l	
What actions or changes are proposed to further reduce exposure levels?	Emissions of lead materials have been reduced by 95% since 1990. Continued emphasis on product quality and preventative maintenance of control systems.	

Lead Development Association International
Part II: Description of Distinct Activities

EDUCATION (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Educational seminars for doctors and industrial hygienists and for company managers.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To teach representatives of companies which produce or use lead about new or existing legislation, with a view to helping them reduce blood lead levels within the workplace and reduce emissions to the external environment. A particular focus on medical aspects.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1981 (6 seminars), 1993, 1995, 1998 (3 seminars). Ongoing, will be organised whenever appropriate.
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	No

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	All companies have blood lead monitoring programmes for their workforces, and most also monitor the local environment. National and local authorities verify results and thus act effectively as external auditors.
Programme results	
What are the results of the monitoring programme(s) described?	Constant and continuing decreases in the blood lead levels of workers, declining emissions to environment.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Periodic seminars to educate new doctors and newcomers to industry, and to act as refresher courses.
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
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Lead Industries Association, North America
Part II: Description of Distinct Activities

OCCUPATIONAL EXPOSURE Voluntary OSHA Programme (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	43 companies have volunteered to for a five-year programme to lower the blood lead removal and return levels for their workers.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce lead exposure and blood lead levels.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1997 2001
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Annual data collection and reporting.
Programme results	
What are the results of the monitoring programme(s) described?	In 1997, 24 more workers were removed from the workplace and 12% less had blood lead levels above 40 µg/dL as compared to 1996.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Continuation of the programme.
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	NA

Further information	
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EDUCATION Industry Outreach Education (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	LIA provides videos to downstream lead users and hobbyists on lead exposure reduction.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce workers' and hobbyists' lead exposure; to reduce take-home exposure.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	Ongoing.
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA

Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Continued distribution of materials.
Related government programmes	
Describe any government initiative in relation to this activity.	OSHA requires worker education and EPA promotes efforts to lower take-home exposures.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Continued educational efforts
Further information	
Who can be contacted for more information?	Jeffrey T. Miller Lead Industries Association, Inc. 295 Madison Avenue, Rm. 808 New York, NY 10017 Telephone: + 1 (212) 578 4750 Fascimile: + 1 (212) 684 7714 E-mail: miller@leadinfo.com

EDUCATION **Worker Protection Materials** **(Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)**	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	LIA provides printed information and videos to lead-using and -producing companies, to be used in worker education efforts for lead exposure reduction.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce worker lead exposure and take-home exposures.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Captured lead particles can be recycled
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Regular air and blood lead testing at facilities by affected companies

Programme results	
What are the results of the monitoring programme(s) described?	Generally declining blood lead levels
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Continued distribution of materials
Related government programmes	
Describe any government initiative in relation to this activity.	OSHA requires worker education in certain lead facilities, and EPA promotes efforts to lower take-home exposures.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Continued education efforts
Further information	
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INFORMATION EXCHANGE Publishing of "Lead Recycling Directory" (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	List of facilities in North America that are willing to recycle lead scrap, and the various types of scrap accepted at each facility.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To promote lead recycling
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes. It matches lead scrap with recyclers.
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	ILZSG monitors the amount of lead that is recycled.

Programme results	
What are the results of the monitoring programme(s) described?	Lead recycling has increased.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	Updated issues and free availability.
Related government programmes	
Describe any government initiative in relation to this activity.	Federal government and most states have regulations promoting lead recycling.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	Jeffrey T. Miller Lead Industries Association, Inc. 295 Madison Avenue, Rm. 808 New York, NY 10017 Telephone: + 1 (212) 578 4750 Fascimile: + 1 (212) 684 7714 E-mail: miller@leadinfo.com

INFORMATION EXCHANGE Annual Conference on Occupational Health and Environmental Protection (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Now in its 20th year, LIA sponsors an annual conference.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Provide up-to-date information on occupational health and environmental protection.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Regular monitoring of worker blood lead levels and lead releases to the environment.

Programme results	
What are the results of the monitoring programme(s) described?	Overall levels have been declining.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	OSHA, EPA and state regulatory requirements.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Continued exposure and release reduction efforts.
Further information	
Who can be contacted for more information?	Jeffrey T. Miller Lead Industries Association, Inc. 295 Madison Avenue, Rm. 808 New York, NY 10017 Telephone: + 1 (212) 578 4750 Fascimile: + 1 (212) 684 7714 E-mail: miller@leadinfo.com

EDUCATION/INFORMATION EXCHANGE Information to Urban Health Clinics (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	In 1996, LIA produced and distributed large quantities of the booklet "Lead and Your Health" to urban health clinics in major cities.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	The programme was designed to provide free information on lead exposure to low-income, urban parents.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1996 1996
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	NA
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Periodic government samplings of blood lead levels.

Programme results	
What are the results of the monitoring programme(s) described?	Declining national blood lead levels
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	NA
Further information	
Who can be contacted for more information?	Jeffrey T. Miller Lead Industries Association, Inc. 295 Madison Avenue, Rm. 808 New York, NY 10017 Telephone: + 1 (212) 578 4750 Fascimile: + 1 (212) 684 7714 E-mail: miller@leadinfo.com

EDUCATION Lead at Outdoor Shooting Ranges (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	The National Shooting Sports Foundation (affiliated with LIA) has produced and distributes two environmental guides, "Environmental Aspects of Construction and Management of Outdoor Shooting Ranges" and "Lead Mobility at Shooting Ranges".
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To educate users about the management and risk of lead at ranges
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	Ongoing
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	Yes, recycling of captive spent ammunition
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	NA

Programme results	
What are the results of the monitoring programme(s) described?	NA
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	NA
Related government programmes	
Describe any government initiative in relation to this activity.	NA
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Continued distribution
Further information	
Who can be contacted for more information?	Jeffrey T. Miller Lead Industries Association, Inc. 295 Madison Avenue, Rm. 808 New York, NY 10017 Telephone: + 1 (212) 578 4750 Fascimile: + 1 (212) 684 7714 E-mail: miller@leadinfo.com

Metallic Cans National Association, Mexico
Part II: Description of Distinct Activities

FOOD PACKAGING	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	In 1992, the Mexican metallic can industry stopped producing cans with lead for food consumption, as a voluntary initiative.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To eliminate the use of lead in cans
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1991-92
Aimed at recycling?	
Is the activity aimed at promoting and maximizing the use of economically viable collection and recycling programmes? If so, please describe.	No
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	No
What are the results of these monitoring programmes?	None
Summarize any future risk management activities you may be considering, including supporting rationale.	None
Describe any government initiative in relation to this activity.	None

Describe any industry programme initiated in relation to this activity.	None
Further information	
Contact for further information.	José Castro National Institute of Ecology Telephone: + 52 (5) 624-34-17) E-mail: jdcastro@ine.gob.mx

Met-mex Peñoles
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling?		Every six months
What methods are used for blood lead analysis?		Atomic absorption (graphite furnace)
Are other markers of exposure monitored? If yes, please describe.		Urinary coproporfirine
Occupational Exposure Levels		
Males	Number of exposed workers	859
	Average blood lead levels	32.6 µg/dL
	Range of blood lead levels	3.0-65 µg/dL
Females	Number of exposed workers	4
	Average blood lead levels	8.3 µg/dL
	Range of blood lead levels	

General Population Exposure Levels	
Adult males Number of exposed workers Average blood lead levels Range of blood lead levels Adult females Number of exposed workers Average blood lead levels Range of blood lead levels Children Number of exposed workers Average blood lead levels Range of blood lead levels How do these values compare to those distant from your facility?	

Environmental Monitoring Programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available.	Air 0.5-4.7 μg/m^3 Water 0.005 mg/litre Soil 0.02-0.2%
Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead?	Yes, the levels have changed.
What actions or changes are proposed to further reduce exposure levels?	To further reduce exposure levels: - training - increasing our ventilation capacity - enclosing some facilities.

Met-mex Peñoles
Part II: Description of Distinct Activities

ENVIRONMENTAL MANAGEMENT SYSTEM Monitoring Programme – Air, Water Recycling Programme – Waste, Paper, Plastics (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	Continuous monitoring of stocks Mexican Environmental Legislation Internal policies Internal regulations
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce lead exposure to our workers and community To reduce our lead emissions To minimise lead residues
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1980 Every year we set new goals.

Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	We have a programme to minimise the residues and recycle the wastes.
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Continuous monitoring of stocks Cost Efficiency indicators Amount of residues
Programme results	
What are the results of the monitoring programme(s) described?	Every year we have reduced our emissions, because we know the real time for concentrations in our stocks.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	We are implementing ISO 14000.
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	

Further information	
Who can be contacted for more information?	Camilo Valdez AV Tegucigalpa 444, Los Angeles Torréon, Coahuija, Mexico Telephone: + 52 (17) 293 461 Facsimile: + 52 (17) 293 492

National Artisans Fund (Fondo Nacional para el Fomento de las Artesanias)

CERAMIC WARE AND CRYSTAL WARE; OCCUPATIONAL SETTINGS	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	In 1991, an agreement was established between the government and NGOs to implement a programme to reduce lead in products In 1994, two standards are published: one to set lead limits in pottery, the other to establish a three-year period in which to avoid lead in pottery.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	Substitution of lead use in glazing pottery
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	1991 – undefined
Aimed at recycling?	
Is the activity aimed at promoting and maximizing the use of economically viable collection and recycling programmes? If so, please describe.	None
Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	A norm has been established for detection of lead in pottery through spectrophotometry analysis. A seal in every piece indicates that the product does not contain lead.
Programme results	
What are the results of the monitoring programmes?	Detection and retirement of ceramic pieces from the market.

Future risk management activities	
Summarize any future risk management activities you may be considering, including supporting rationale.	The Ministry of Health (Secretaría de Salud) is in charge of supervising contents of lead in public market products.
Related government programmes	
Describe any government initiative in relation to this activity.	Technology transfer with other countries in Latin America.
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	Pilot promotion of high temperature furnace that burns gas in artisan communities. Educational programmes for artisans.
Further information	
Contact for further information.	José Castro National Institute of Ecology Telephone: + 52 (5) 624-34-17 E-mail: jdcastro@ine.gob.mx

Pasminco
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling?		Dependent upon exposure and levels – can be four weeks or up to 12 months.
What methods are used for blood lead analysis?		Australian standard – graphite furnace
Are other markers of exposure monitored? If yes, please describe.		ZPP, coproporphyrins
Occupational Exposure Levels		
Males	Number of exposed workers	3510
	Average blood lead levels	Not available: 710 ≥ 30 µg/dL
	Range of blood lead levels	3-60 µg/dL
Females	Number of exposed workers	200
	Average blood lead levels	Not available: 13 > 15 µg/dL
	Range of blood lead levels	3-25 µg/dL

General Population Exposure Levels	
Adult males Number of exposed workers Average blood lead levels Range of blood lead levels	No. However, the company assists the authorities in programmes to monitor children's blood lead in communities near our operating site. Results are kept by the health authorities, but information released to the public indicates significant reductions have occurred.
Adult females Number of exposed workers Average blood lead levels Range of blood lead levels	
Children Number of exposed workers Average blood lead levels Range of blood lead levels	National Health and Medical Research Council goal: 90% children 1-5 years < 10 μg/dL by 1998.
How do these values compare to those distant from your facility?	Survey of general population (Donovan 1994) found 92.7% < 10 μg/dL. In communities near Pasminco sites; the percentage ≥ 10 μg/dL ranges from 20 to 60%.

Environmental Monitoring Programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available. Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead? What actions or changes are proposed to further reduce exposure levels?	Air All sites have action plans to achieve the company's objective of 1.5 $\mu g/m^3$ at the site boundary. General reduction in ambient lead in air in the general community, but is not always evident in site boundary readings. Water Sites are working towards zero discharge. Where discharge occurs, there is high degree of compliance with license conditions. Large reduction in exceedences of license conditions. Soil Soil lead levels are measured at four sites. Levels are generally 1000 ppm, with some results in the 1000-5000 ppm range. Action plans to identify sources of fugitive emissions. Action plans to reduce fugitive emissions. Stack emissions are controlled by baghouses or wet scrubbers.

Penarroya Oxide
Part I: Levels of Exposure

Medical Surveillance Programme/Other Markers of Exposure		
What is the frequency of sampling?		Two a year for blood control and more if necessary.
What methods are used for blood lead analysis?		AAS
Are other markers of exposure monitored? If yes, please describe.		Ala urinaire + protoporphyrine zinc
Occupational Exposure Levels		
Males	Number of exposed workers	28 males and females
	Average blood lead levels	45 µg/dL
	Range of blood lead levels	
Females	Number of exposed workers	
	Average blood lead levels	
	Range of blood lead levels	

General Population Exposure Levels	
Adult males Number of exposed workers Average blood lead levels Range of blood lead levels Adult females Number of exposed workers Average blood lead levels Range of blood lead levels Children Number of exposed workers Average blood lead levels Range of blood lead levels How do these values compare to those distant from your facility?	
Environmental Monitoring Programmes	
If your company monitors air, water effluent, soil or other environmental media, please summarize monitoring results and include background levels if available. Have the levels described above changed as a result of actions taken to reduce exposures or releases of lead? What actions or changes are proposed to further reduce exposure levels?	<u>Air</u> We carry out analyses once a year everywhere on the site (the level is around 100 µg/m^3) and on each worker. <u>Water effluent</u> We carry out analyses each day that we discharge water into the river (after water treatment). Our lead concentration is around 0.8 µg/l. The lead concentration in the water is being reduced continuously. Yes, the blood lead level is being reduced regularly. We make continuous improvements on-site.

Penarroya Oxide
Part II: Description of Distinct Activities

ENVIRONMENTAL MANAGEMENT SYSTEM Monitoring Programme, Recycling Programme (Activities such as performance standards, monitoring programmes, recycling programmes, voluntary initiatives)	
Main elements	
Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.	We treat all the water on the site, even rainwater. We install new filters regularly.
Objectives	
What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets.	To reduce lead concentration in water after treatment to under 0.5 µg/l. To reduce lead concentration in the air.
Duration	
What year did the project begin and what year did it end (or is it expected to end)?	NA
Aimed at recycling?	
Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.	We are recycling most of our wastes (lead oxide), and all the other lead oxide waste is being recycled by the company that sells the lead to us.

Programme evaluation	
What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?	Lead concentration in blood, air and water.
Programme results	
What are the results of the monitoring programme(s) described?	There is continuous improvement.
Future risk management activities	
Summarise any future risk management activities you may be considering, including supporting rationale.	
Related government programmes	
Describe any government initiative in relation to this activity.	
Industry-related programmes	
Describe any industry programme initiated in relation to this activity.	
Further information	
Who can be contacted for more information?	Mr Lopacinski Quai de l'Oise 60 870 Rieux France Telephone: + 33 (03) 44 72 90 00 Facsimile: + 33 (03) 44 72 78 72

ANNEX C

MEMBER COUNTRY QUESTIONNAIRE

FOLLOW-UP TO THE 1996 MINISTERIAL DECLARATION ON LEAD REVIEW OF OECD MEMBER COUNTRY AND INDUSTRY PROGRESS

SURVEY OF GOVERNMENTS

OVERVIEW

Background

In February 1996, OECD Environment Ministers adopted a *Declaration on Risk Reduction for Lead* to advance national and co-operative efforts to reduce risks from exposure to lead. The governments of OECD also declared that the OECD should review progress by Member countries in pursuance of the Declaration three years after adoption (i.e. February 1999) and assess the need for further action.

A Council Resolution [C(96)42/Final] was also adopted in February 1996, linking the Declaration to the OECD. (A copy of the Resolution and Declaration is provided in Attachment 1.) The Resolution specifically instructs the Environment Policy Committee to review the progress described in the Declaration.

In order to conduct such a review, the following questionnaire has been developed, by which countries can report on their progress in implementing the Declaration. A similar questionnaire has been developed for completion by relevant industry companies or organisations. Companies have been asked to co-ordinate their responses with their national governments.

Time Frame Covered by Questionnaire

This questionnaire covers those activities that were completed after 1992 or are still ongoing. The results from the questionnaire will document all new activities not captured in the 1993 OECD Monograph on Lead [OCDE/GD(93)67], which included data generated up to 1992, or provide an update on the results of those activities which were ongoing when the Monograph was completed.

It is important to note that some activities completed by the end of 1992 are still reaping benefits today. For instance, some countries established emission reduction programmes prior to 1992. Although that action would not be reported for this questionnaire, an update on the progress could be presented if monitoring or follow-up data are available. The Secretariat will note in the report documenting the results from the survey that, in order to get a complete picture of all relevant risk management activities in Member countries, the reader of the report should also consult the Monograph.

Design of the Questionnaire

The questionnaire has been designed to collect basic information from Member countries on their progress since the Declaration was adopted. Particular attention should be paid to those activities identified by Ministers in the Declaration. The questionnaire is divided into two parts. Part I requests information on the levels of lead exposure in each country. Part II requests information on distinct lead risk management activities. A separate Part II form should be completed for each distinct activity (e.g. if a country developed a regulation to reduce lead levels in gasoline, and also developed a voluntary agreement with industry to reduce emissions of lead, a separate questionnaire would be completed for each activity). If a question does not apply to a specific activity, please enter "**NA"** in the answer field.

The questionnaire is designed to allow reporting directly on the form; however, respondents may also provide their responses on separate sheets. If a respondent desires an electronic version of the questionnaire, please contact the Secretariat identified below.

Reporting Period

Please complete the questionnaire by 15 June 1998 and submit to:

Richard G. Sigman
Environmental Health and Safety Division
Environment Directorate
Organisation for Economic Co-operation and Development
2 André-Pascal
75775 Paris CEDEX 16
FRANCE

(tel: 33 1 4524 1680; Facsimile: 33 1 4524 1675; E-mail: Richard.Sigman@oecd.org)

OECD FOLLOW-UP TO 1996 MINISTERIAL DECLARATION ON LEAD

GOVERNMENT QUESTIONNAIRE

PART I: LEVELS OF EXPOSURE

Please complete one PART I form per country.
If a question does not apply, please enter "NA" in the answer field.

TO BE COMPLETED BY 15 June 1998

1 ***Country***

2 ***Are there programmes or activities within your country to measure blood lead levels (or other biomarkers of exposure) in specific populations, such as children or workers, or in the general population? If so, describe the population(s) surveyed, methods used, dates conducted, and data obtained. [Note: these data may be available from health agencies and/or occupational health authorities.]***

3 ***Are there programmes to monitor lead levels in environmental media, such as air or soil, or in food or drinking water? If so, describe these programmes, methods used, sampling design, dates conducted, and data obtained.***

4 ***Based upon these data, do current levels of lead in humans or environmental media exceed levels of concern such as established national or sub-national (e.g. state/provincial) standards or goals, or international standards or guidelines recognised in your country? Have these levels changed as a result of actions taken to reduce exposures or releases of lead?***

5 ***What actions or changes are proposed to further reduce these exposure levels?***

PART II: DESCRIPTION OF DISTINCT ACTIVITIES

Items (1) through (7) in the 1996 Ministerial Declaration on Lead (Attachment 1) refer to things the Ministers declared they would do to advance national and co-operative efforts to reduce risks from exposure to lead. These items, including those in Annex 1 to the Declaration, contain a variety of activities that countries are to consider for action. Please use a separate PART II form to describe each distinct activity that was completed after the end of 1992, or is still ongoing. If a question does not apply to a specific activity, please enter "NA" in the answer field.

TO BE COMPLETED BY 15 JUNE 1998

6 ***Activity (e.g. phase-down of lead in gasoline, monitoring programme, recycling programme, voluntary initiative, use regulation, product regulation, taxation, etc.)***

7 ***DESCRIPTION OF ACTIVITY***

a. Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or implementation.

b. What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets (e.g. prohibition on the selling of lead-based paint).

c. What year did the project begin and what year did it end (or is it expected to end)?

Begin:

End:

d. Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.

e. What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?

f. What are the results of the monitoring programmes described above?

g. Summarise any future risk management activities you may be considering, including supporting rationale.

h. Describe any efforts to share information concerning the exposure and methods for reducing such exposure with non-OECD countries.

i. Describe any industry programme initiated in relation to this activity.

j. Who can be contacted for more information?

Name
Address

Telephone Number
Fax Number
E-mail Address

ANNEX D

INDUSTRY QUESTIONNAIRE

OECD FOLLOW-UP TO 1996 MINISTERIAL DECLARATION ON LEAD

INDUSTRY QUESTIONNAIRE

PART I: LEVELS OF EXPOSURE

Please complete one PART I form per company/association.
If a question does not apply, please enter "NA" in the answer field.

TO BE COMPLETED BY 15 JUNE 1998

1 ***mpany or Association, and Geographic Region Represented***

2

Type of Industry Sector. Please check appropriate box(es).

Mining	**Battery Manufacture**	**Other (please explain)**
Smelting	**Crystal ware**	_____
Refining	**Ceramic ware**	_____
Recycling	**Solder**	

3 **TYPE OF MEDICAL SURVEILANCE OR OTHER MARKERS OF EXPOSURE**

a. Does your company have a medical surveillance programme for lead exposure?
YES NO

b. If yes, what is the frequency of sampling?

c. What methods are used for blood lead analysis?

d. Are other markers of exposure monitored? **YES** **NO**

If yes, please describe:

4 **LEVELS OF OCCUPATIONAL EXPOSURE**

***Please provide the most information regarding recent levels of occupational exposure*:**

Males:	**Number of exposed workers**	_____
	Average blood lead level	_____
	Range of blood lead levels	_____
Females:	**Number of exposed workers**	_____
	Average blood lead level	_____
	Range of blood lead levels	_____

5 **LEVELS OF GENERAL POPULATION EXPOSURE**

a. Does your company have a programme to monitor general population exposure around your facility?

YES **NO**

b. If yes, provide an indication of survey results.

Adult Males:	**Number surveyed**	_____
	Average blood lead level	_____
	Range of blood lead levels	_____
Adult Females:	**Number surveyed**	_____
	Average blood lead level	_____
	Range of blood lead levels	_____
Children:	**Number surveyed**	_____
	Average blood lead level	_____
	Range of blood lead levels	_____

c. How do these values compare to those distant from your facility?

6 **MONITORING**

a. Does your company monitor lead levels in:

- ***AIR*** **YES NO**
- ***WATER EFFLUENT*** **YES NO**
- ***SOIL*** **YES NO**

b. If the answer to any of the above is yes, please summarise monitoring results and include background levels if available.

c. Do you employ continuous monitoring ? **YES NO**

7 ***Have these levels (from 6 above) changed as a result of actions taken to reduce exposures or releases of lead? (You may wish to report these in graphical or tabular format showing changes over a five-year period, if appropriate.)***

:

8 **ENVIRONMENTAL MANAGEMENT**

a.	***Does your organisation have an Environmental Management System in place?***	**YES**	**NO**
b.	***Does your facility control air emissions?***	**YES**	**NO**
c.	***Does your facility dispose lead-containing residues?***	**YES**	**NO**

d. What actions or changes are proposed to further reduce exposure levels?

PART II: DESCRIPTION OF DISTINCT ACTIVITIES

Items (1) through (7) in the 1996 Ministerial Declaration on Lead (Attachment 1) refer to things the Ministers declared they would do to advance national and co-operative efforts to reduce risks from exposure to lead. These items, including those in Annex 1 to the Declaration, contain a variety of activities that countries are to consider for action. Please use a separate PART II form to describe each distinct activity that was completed after the end of 1992, or is still ongoing. If a question does not apply to a specific activity, please enter "NA" in the answer field. Please co-ordinate your responses with your national government if applicable.

TO BE COMPLETED BY 15 JUNE 1998

9 ***Activity (e.g. performance standards, monitoring programme, recycling programme, voluntary initiative)***

10 ***DESCRIPTION OF ACTIVITY***

a. Describe the main elements of the activity, including monitoring, legislation, regulations, policies and/or voluntary implementation.

b. What are the specific objectives, goals and/or targets of this activity? Describe the status of the activity with respect to meeting the objectives, goals and/or targets (e.g. emission reduction)?

c. What year did the project begin and what year did it end (or is it expected to end)?

Begin:

End:

d. Is the activity aimed at promoting and maximising the use of economically viable collection and recycling programmes? If so, please describe.

e. What measures are in place to monitor and evaluate progress in meeting specific objectives and goals, as well as the efficacy of specific actions related to lead risk reduction?

f. What are the results of these monitoring programmes?

g. Summarise any future risk management activities you may be considering, including supporting rationale.

h. Describe any government programme initiated in relation to this activity.

i. Describe any industry programme initiated in relation to this activity.

j. Who can be contacted for more information?

Name
Address

Telephone Number
Fax Number
E-mail Address

ANNEX E

COUNCIL RESOLUTION/ MINISTERIAL DECLARATION

General Distribution **C(96)42/FINAL**

Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

OLIS : **21-Mar-1996**
Dist. : **22-Mar-1996**

COUNCIL

Council

RESOLUTION OF THE COUNCIL

CONCERNING THE DECLARATION ON RISK REDUCTION FOR LEAD

(adopted by the Council at its 869th Session on 20 February 1996 [C/M(96)4/PROV])

THE COUNCIL

I. NOTES the Declaration on "Risk Reduction for Lead" adopted by the Governments of OECD Member countries at the meeting of the Environment Policy Committee at a Ministerial level on 19-20 February 1996 (the text of the Declaration is reproduced in the Annex to this Resolution).

II. RECOGNISES that the support and publicity to be given by Member Governments to the Declaration will be an important factor in its authority, efficiency and success and invites the Secretary-General to bring the Declaration to the attention of non member countries and of the United Nations Commission for Sustainable Development and other intergovernmental bodies and forums concerned with the sound management of chemicals.

III. INSTRUCTS the Environment Policy Committee to review the progress made by Member countries and to assess the need for further action in conformity with paragraph 9 of the Declaration.

IV. INSTRUCTS the Environment Policy Committee to develop a framework for co-operation of industry in implementing voluntary industry programmes for risk reduction on lead with a view to its wider applicability to other risk reduction activities.

V. REQUESTS the Secretary-General, subject to the availability of the necessary resources, to compile and publish a guide on risk reduction on lead, based on the extensive experience of Member countries and on the work carried out within the OECD risk reduction programme.

ANNEX

DECLARATION

on Risk Reduction for Lead

THE GOVERNMENTS OF OECD MEMBER COUNTRIES,[1]

Having regard to the call of the Environment Ministers for risk reduction action in Member countries as set out in their 1991 Declaration "Environmental Strategies in the 1990's";

Having regard to the Decision-Recommendation of the Council concerning Co-operative Investigation and Risk Reduction of Existing Chemicals [C(90)163/FINAL] as well as to its Recommendation concerning Integrated Pollution Prevention and Control [C(90)164/FINAL];

Having regard to the conclusions of the meeting of the United Nations Commission on Sustainable Development in May 1994 concerning the health impact to humans exposed to lead in gasoline, and encouraging further efforts to reduce exposure of humans to lead in gasoline (UN Economic and Social Council Official Records, 1994, Supplement No. 13, pp 32-34);

Recognising the risks to human health, in particular for children and other high risk and sensitive populations, and risks to the environment associated with lead exposure and the need for co-operative commitments to reduce any transboundary exposure;

Recognising the differing needs and circumstances of Member countries which call for flexible national risk reduction strategies and time frames;

Recognising the value of national and international risk assessments in setting priorities for action on lead risk reduction and in determining the risks and benefits of proposed alternative solutions;

Recognising the willingness of industry to share their experience in the sound management and prudent use of products containing lead including development of alternative solutions;

Welcoming the willingness of the lead industry to share responsibility for risk reduction of lead and benefits of such co-operation in the management of the risks;

Wishing to build upon the results of work to date and the significant reductions in exposure that have been achieved by Member countries and noting with approval the valuable contribution of the OECD Chemicals Programme;

Considering that the sound management of risk from lead exposure is beneficial to all countries and that the range of national actions taken by OECD Member countries could assist and serve as examples to non-member countries;

[1] The mention of "Governments" is deemed to also apply to the European Communities.

DECLARE THAT THEY WILL:

(1) Develop, continue or strengthen, as appropriate, national and co-operative efforts considered necessary to reduce risks from exposure to lead through actions which take into account national priorities, policies, programmes and achievements--recognising that implementation may take the form of voluntary, economic, and/or regulatory actions;

(2) Give highest priority to actions which address the risk of exposure from food and beverages, water, air, occupational exposure and other potential pathways in accordance with Annex I;

(3) Continue to review lead levels in the environment and exposure to lead of sensitive populations (such as children and pregnant women) and of high risk populations (such as certain groups of workers) using the results to evaluate the effectiveness of national programmes in reducing risks from exposure to lead and to identify priorities and opportunities for future actions;

(4) Promote and maximise the use of environmentally sound and economically viable collection and recycling programmes for lead and lead containing products in order to reduce the release of lead to the environment from waste streams;

(5) Extend co-operative efforts to share, including with non-OECD countries, information about exposures of concern, risk reduction options and environmentally sound and economically viable technologies in order to reduce risks from exposure to lead;

(6) Encourage the lead producing and using industries to make best use of their expertise on the management of risks from lead and encourage them to make this expertise available to OECD and non-OECD countries;

(7) Work with the lead producer industry to develop its voluntary programme of action to reduce exposure to lead, which will be implemented in co-operation with national authorities in OECD and interested non-OECD countries and encourage user industries to develop similar programmes**;**

FURTHER DECLARE THAT THE OECD SHOULD:

(8) Support Member countries in implementing this Declaration;

(9) Review progress by Member countries in pursuance of this Declaration three years after adoption and assess the need for further action;

(10) Develop a framework for the co-operation of industry in implementing voluntary industry programmes for risk reduction on lead with a view to its wider applicability to other risk reduction activities;

(11) Compile a guide on risk reduction of lead drawing on the extensive experience of Member countries and the work of the OECD risk reduction programme to assist OECD and non-OECD countries in developing and implementing lead risk reduction programmes;

(12) Bring this Declaration to the attention of the United Nations Commission for Sustainable Development and other intergovernmental bodies and forums concerned with the sound management of chemicals.

INVITE:

(13) Non member countries to take account of the terms of this Declaration, to associate themselves with it and to implement the measures therein;

(14) The relevant international standards organisations (including the International Standards Organisation), to develop or modify, as appropriate, international standards, testing procedures and definitions for products with a view to reducing the release of lead;

(15) Other international organisations, involved with the protection of public health and the environment, to take this Declaration into consideration as they develop or revise goals, guidelines, and associated codes of practice for protection of human health and the environment.

Annex I

a. Progressively phase-down use of lead in gasoline except where needed for essential or specialised uses for which there are no practical, viable alternatives;

b. Eliminate exposure of children to lead resulting from products intended for use by children (e.g. toys, cribs, crayons);

c. Eliminate exposure to lead from food packaging (e.g. for cans, by phasing down use of lead solder in existing canning lines, not using lead solder in new canning lines, or where these are not practical, using functional barriers to prevent lead migration ; for wine-bottle capsules, substituting other materials);

d. Phase down the use of lead in paint and rust-proofing agents except in cases of essential or specialised uses for which there are no practical alternatives;

e. Restrict exposure to lead from the leaching of lead from ceramic ware and crystal ware used for food and beverages (e.g. by effective production and process controls);

f. Restrict the use of lead shot in wetlands and promote the use of alternatives to lead sinkers in shallow waters;

g. Reduce lead levels in drinking water through appropriate measures (e.g. treatment of the water**,** use of materials in the distribution system which do not release lead into the water);

h. Reduce levels of lead in occupational settings;

i. Limit air emissions from major point sources;

j. Establish strategies, including public information programmes, to abate significant exposures arising from the historic use of lead-containing materials in buildings**.**