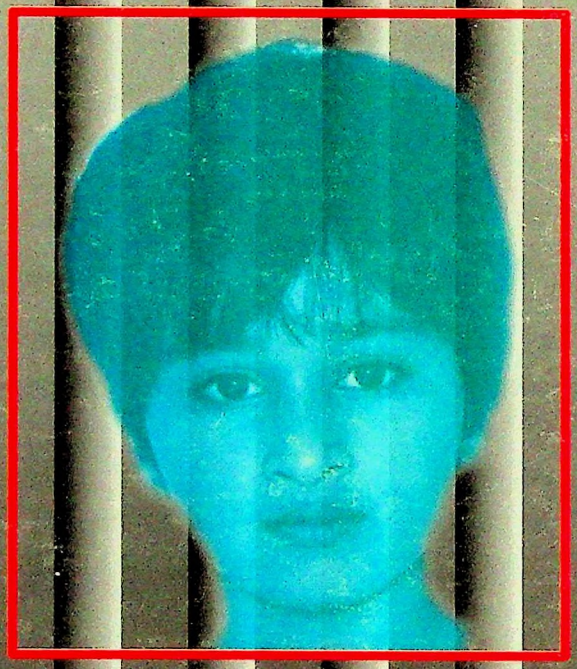


Lead Poisoning

An International Conference
on Prevention and Treatment

Venue: Hotel Ashok, Bangalore
Date: February 8-10, 1999

E-160

The George Foundation

Bangalore, India

February 8, 1999

Distinguished Speakers, Delegates and Attendees:

On behalf of The George Foundation, I wish to thank you for participating in this important conference. Your expertise and experience will greatly contribute to a better understanding of the different dimensions of Lead Poisoning so that we may jointly find ways to deal with the problem.

Lead poisoning presently affects over 100 million children and many other categories of the urban population in India. This environmental health hazard is widespread in practically every developing country. Unless we deal with it effectively and quickly, the loss in productivity of the future workforce and the suffering will be enormous.

The goal of this International Conference on Lead Poisoning Prevention and Treatment is to formulate a comprehensive plan that can be implemented at national levels in developing countries. Free exchange of ideas among participants over the next three days will, in my opinion, result in accomplishing this goal.

Thank you once again for your participation.

Best wishes and kind regards,

Abraham M. George
Managing Trustee

LEAD POISONING:

INTERNATIONAL CONFERENCE ON PREVENTION AND TREATMENT

Hotel Ashok, Bangalore

February 8-10, 1999

His Excellency Shri Khurshed Alam Khan

Governor of Karnataka

Presiding

Shri Suresh Prabhakar Prabhu

Hon'ble Union Minister for Environment & Forests

Chief Guest

and

Shri. J.H. Patel

Hon'ble Chief Minister of Karnataka

Guest of Honour

Lead Poisoning

LEAD POISONING:

INTERNATIONAL CONFERENCE ON PREVENTION AND TREATMENT

SPONSORED BY:

The George Foundation

The World Bank

US Centers for Disease Control and Prevention

US Environmental Protection Agency

World Health Organization

CO-ORGANIZERS

Ministry of Environment & Forests, Government of India

Ministry of Health & Family Welfare, Government of India

Johns Hopkins University

Friends of Lead-Free Children (USA)

ADDITIONAL ASSISTANCE PROVIDED BY:

ICICI Limited

Indian Oil Corporation Ltd

Bharat Petroleum Corporation Ltd

Hindustan Petroleum Corporation Ltd.

Oil & Natural Gas Corporation Ltd.

सत्यमेव जयते

प्रधान मंत्री

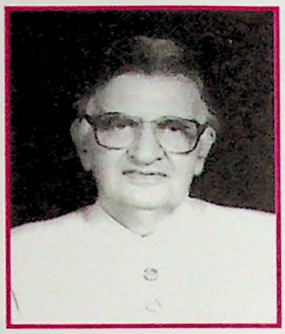
PRIME MINISTER

MESSAGE

I am immensely happy to know that The George Foundation is organising an International Conference on Lead Poisoning at Bangalore on February 8, 1999. Lead Poisoning is slowly emerging as the second deadly scourge, next only to AIDS, that is qualitatively affecting the living conditions of thousands of our countrymen. Available statistics indicate that lead pollution in our environment has reached alarming levels and Government has taken the first step to eliminate this potent hazard by making lead-free petrol mandatory for use by all automobiles. The efforts of Non-Governmental Organisations like The George Foundation to sensitise and create awareness among the public about the ills of lead pollution is commendable. I hope the deliberations at the International Conference will provide a good opportunity for a better understanding to tackle this problem immediately. I extend my best wishes to The George Foundation for the success of the Conference.

(A.B. Vajpayee)

New Delhi
January 25, 1999



GOVERNOR
KARNATAKA

RAJ BHAVAN
BANGALORE

11 January, 1999

MESSAGE

I am happy to know that the George Foundation, Bangalore is hosting an international Conference on "Lead Poisoning-Prevention and Treatment" during the month of February 1999 at Bangalore.

Lead poisoning is the environmental problem for every one. The toxic effect of lead is causing a serious health problem.

I hope the deliberations in the Conference will be useful for prevention of Lead poisoning especially among Children.

On this occasion I extend my warm greetings to the Organisors and delegates and wish the Conference all success.

(KHURSHED ALAM KHAN)

सुरेश पी. प्रभू
SURESH P. PRABHU

मंत्री
पर्यावरण एवं वन
भारत सरकार
नई दिल्ली-110003
MINISTER
ENVIRONMENT & FORESTS
GOVERNMENT OF INDIA
NEW DELHI-110003

MESSAGE

I am delighted to know that an International Conference on Lead Poisoning Prevention and Treatment is being organized by The George Foundation together with other institutions concerned about environmental protection, disease control and prevention.

I am also aware of the laudable efforts that the Foundation has made to pioneer Project Lead-Free, an extensive lead screening programme in seven major cities of India. I congratulate all those who have contributed and participated in this venture.

Lead poisoning is an environmental, disease especially among young children, that needs immediate attention as our children are the future of this nation. India is a fast developing country, and with our growth, strategies need to be evolved to deal with the adverse effects of this problem.

With the ensuing increase in the number of automobiles and other lead-related industries, this is the right time to develop programmes on understanding and preventing lead poisoning. This Ministry will take appropriate measures to address the lead poisoning problem in India.

My congratulations to the organisers of this pioneering effort, and I wish the Conference all success.

JAI HIND

SURESH P. PRABHU

राज्य मंत्री
(स्वतंत्र प्रभार)
स्वास्थ्य एवं परिवार कल्याण
भारत सरकार
नई दिल्ली - 110 011

DALIT EZHILMALAI

MINISTER OF STATE
(INDEPENDENT CHARGE)
HEALTH AND FAMILY WELFARE
GOVERNMENT OF INDIA
NEW DELHI - 110 011

MESSAGE

I am glad to know that the George Foundation is going to organise an International Conference on Prevention and Treatment - Lead Poisoning. I understand that International Scientists and Policy Makers / Administrators who are recognised leading experts across the world are going to participate in the Conference. This Conference will not only benefit India, but also other developing Countries with similar issues and problems with regard to Lead Poisoning. I hope the deliberation in the Conference would be helpful for updating and upgrading the expertise among the Indian experts in the field.

On this occasion, I congratulate the Foundation for its endeavour and wish the conference all success.

(DALIT EZHILMALAI)

Place: New Delhi
Date: 29.1.1999

J. H. PATEL
CHIEF MINISTER

BANGALORE-560001

No. CMP/1547/99

DATED 30/01/1999

M E S S A G E

I am happy that an **International Conference** on the **Prevention and Treatment of Lead Poisoning** is being hosted and organised by **The George Foundation** in the city of Bangalore during 8th-10th February,1999. I also understand that a large number of Scientists and Experts who have received recognition from World bodies such as WHO, World Bank, Centre for Disease Control and Prevention and other Environmental Institutions will be attending.

As the participants are Specialists from all over the World, I am confident that the Conference will give serious thought to the problem of lead in our Society especially on its effect on children, whom I understand are most vulnerable not only in India but all over the World. It is also heartening that, both Central and State Governmental officials will be participating in the Conference. I do hope that the deliberations of the Conference will form the basis of suitable guidelines to our Government for necessary implementation of a meaningful policy and draw a workable time bound plan for eradication of the lead problem.

I wish the **Conference** great success and congratulate **The George Foundation** for pioneering this event.

J.H.Patel
(J.H.PATEL)

Admiral O.S.Dawson,I.N.(Retd)PVSM,AVSM,
1155,6th Main Road,4th Block,
1st Stage,HBR Layout,
BANGALORE-560 084.

The World Bank
Washington, D.C. 20433
U.S.A.

MIEKO NISHIMIZU
Vice President
South Asia

December 30, 1998

Lead Poisoning: An International Conference on Prevention and Treatment

Welcome to this conference, co-sponsored by The George Foundation, the Centers for Disease Control and Prevention (U.S.A.), the U.S. Environmental Protection Agency, and the World Bank.

Human exposure to lead is a major environmental health hazard. Since 1996, it has been one of the World Bank's ten highest priority environmental issues. As a participant of this conference, you are aware that children are the most susceptible to lead's detrimental effects – and that it is our responsibility to prevent this unnecessary poisoning.

A large part of the lead poisoning problem can be attributed to the use of lead in gasoline. Significant reduction in human exposures to lead can be achieved cost-effectively by eliminating this hazard. The benefits of doing away with leaded gasoline are immediate and measurable, and far outweigh the costs. The conversion to unleaded gasoline could, in principle, be carried out within five years if countries committed themselves to a comprehensive phase-out program.

The World Bank has collaborated with regional lead phase-out programs in Latin America, the Caribbean Basin, Central and Eastern Europe, and the former Soviet Union. In Asia, between 1991 and 1995, the World Bank helped the Government of Thailand introduce a series of initiatives that resulted in the elimination of leaded gasoline and *the reduction of ambient lead levels in the air by a factor of ten*. By 1995, leaded gasoline was effectively eliminated in Thailand, at a net cost of US$0.2 per liter of gasoline.

On the full range of lead poisoning issues, including the reduction of multiple sources of human exposure and increasing the range of viable treatment options, there is much more that can be done in Asia. We are here to help see that more is done, both in our work within individual countries, and through regional meetings such as this one.

The recognition of the lead problem, and the necessary political commitment to do something about it, have decisive roles in any effective lead phase-out process. We expect that this conference will add to your knowledge of the lead poisoning problem and its specific solutions – and we hope that you will leave with a renewed commitment to address this and to implement workable solutions in your country. Thank you for your interest and willingness to participate.

Mieko Nishimizu
Vice President
South Asia Region

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30341-3724

Dear Honored Guests:

On behalf of the United States Centers for Disease Control and Prevention (CDC), I wish to extend a warm welcome to all of you who are attending this conference.

We are honored to be a primary sponsor of this important event. The CDC has taken an active role in helping to organize this conference because we fully understand the health damage caused by excessive lead exposure.

Through the decades, the CDC has aggressively pursued research and evaluated scientific data in order to formulate policy recommendations regarding the proper actions needed to eliminate childhood lead poisoning. We have learned that the prevention of lead poisoning requires a coordinated society-wide effort to eliminate this disease. And in the United States, we have been successful: the percentage of children with elevated blood lead levels has dropped 95% since the late 1970s. We expect to eradicate this disease completely in the United States by the year 2011.

However, the sources and pathways of lead exposure in India are different. It is vital that information about the Indian situation be used wisely, so that India can also eliminate this entirely preventable disease. I trust that the delegates will benefit greatly from the knowledge and commitment shared at this landmark conference. I also trust you can take this information back home and utilize it in a manner which will help reduce the lead exposure to the children and families living in your communities. I wish you all the best in this most important undertaking.

Sincerely yours,

Richard J. Jackson, MD, MPH
Director
National Center for Environmental Health

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 15 1999

OFFICE OF
INTERNATIONAL ACTIVITIES

Dr. Abraham George
The George Foundation
Bangalore, India

Dear Dr. George:

Thank you for bringing to my attention the International Conference on Lead Poisoning. It is an honor for the USEPA to participate as a sponsor as well as providing speakers.

Lead poisoning is one of the most serious and prevalent diseases of environmental and occupational origin in the world. Yet, it is an entirely preventable problem. Lead poisoning affects virtually all human biochemical processes and organ systems leading to a broad range of serious and often irreversible health consequences, especially in children.

This conference, organized and hosted by the George Foundation and co-sponsored by the World Bank, the Centers for Disease Control and Prevention and the U.S. Environmental Protection Agency, presents an important opportunity for leaders in the field to discuss the problem of lead poisoning and to identify shared strategies to prevent this disease that affects children, workers and their families in India and in other developing countries. I am confident this conference will prove extremely useful as its participants represent experts from academia, government and industry who have an active interest in lead exposure reduction and treatment. The George Foundation should be congratulated for bringing together such a broad-based coalition of individuals, each of whom will be a valuable contributor to this worthy process.

The U.S. Environmental Protection Agency wishes the Conference every success and is confident that this effort will mark the beginning of a long and productive dialogue among delegates that will result in specific, achievable actions to improve the health, environment and quality of life of people in India and around the world.

Sincerely,

William A. Nitze

William A. Nitze
Assistant Administrator

WORLD HEALTH ORGANIZATION ORGANISATION MONDIALE DE LA SANTE

Distinguished Delegates and Attendees

On behalf of the World Health Organisation I wish to welcome you to this important international conference on the Prevention and Treatment of Lead Poisoning. In particular I wish to thank the organisers, and especially the George Foundation, for taking the initiative in putting together this stimulating and innovative programme. The surveillance program that has been undertaken here in India is truly extraordinary. We congratulate you on your efforts and hope that this important initiative will help to stimulate further awareness of the public health impact of lead poisoning throughout the world, most particularly in developing countries.

WHO has long considered lead poisoning to be a key preventable disease of immense potential public health impact. Worldwide, human exposure to lead remains an important issue, whether this occurs in the workplace, the home environment, or the community environment at large. Lead is one of the best studied toxic substances, the health effects of which we probably know more about than virtually any other chemical. Its ill-health effects have been well documented across an extremely wide range of exposure, right down to very low levels approaching the limits of detection. The very young, the poor and the occupationally exposed are normally most at risk.

Over many years WHO has been actively involved in initiatives aimed at obtaining a better understanding of the problem in all its dimensions, from the toxicology and epidemiology of clinical and sub-clinical lead poisoning, to measures associated with its prevention and control. This conference provides a unique opportunity to draw on the shared experiences and lessons learned from many different organisations and countries, with varied perspectives and insights into the problems faced. I hope that your discussions here during the next few days will help to influence relevant regulation and policy issues, so that current and future generations will be protected against one of the most insidious environmental health problems which has plagued us for so long. I wish you well in your deliberations.

Yours Sincerely

Mrs Poonam Khetrapal Singh
Executive Director
Sustainable Development and Healthy Environments

CH-1211 GENEVA 27-SWITZERLAND Telegr.: UNISANTE-GENEVA Telex: 415416 OMS Fax 791.07.46 CH-1211 GENEVE 27-SUISSE Télégr.: UNISANTE-GENEVE

WORLD RESOURCES INSTITUTE

1709 New York Avenue, N.W., Washington, D.C. 20006, Telephone: 202-638-6300
Facsimile: 202-638-0036 WWW: http://www.wri.org/wri/ gopher: //gopher.wri.org:7018/

The George Foundation
1155, 6th Main Road
4th Block, 1st Stage HBR Layout
Bangalore, India 560084

The World Resources Institute (WRI) congratulates The George Foundation for taking the initiative to organize the *International Conference on Prevention and Treatment of Lead Poisoning* in Bangalore, India. Lead poisoning is a very important health problem, affecting millions of young children, not only in India but all over the world. At this stage, WRI is planning a larger program focussed on Global Children's Health, in which lead poisoning will feature along with other environmental health problems as an important component.

Our publication, the *World Resources: A Guide to the Global Environment*, took note of this problem as part of its larger theme of "Environmental Change and Human Health" in its 1998-99 issue (available through our website: *www.wri.org*). This report was prepared jointly with the World Bank, the United Nations Environment Programme and the United Nations Development Programme.

We wish all the assembled experts and participants success in their efforts to draw a workable plan for controlling the lead problem in India and other countries in the South and East Asian region.

Sincerely,

Devra L. Davis

Devra L.Davis, Ph.D., MPH
Director
Health, Environment & Development
World Resources Institute

Karim Ahmed

A. Karim Ahmed, Ph.D.
Deputy Director
Health, Environment & Development
World Resources Institute

AGENDA

LEAD POISONING:

An International Conference on Prevention and Treatment

Organized and hosted by **The George Foundation**
February 8 – 10, 1999 in Bangalore, India

Co-sponsors: The George Foundation, The World Bank, Centers for Disease Control and Prevention (USA), Environmental Protection Agency (USA), World Health Organisation (WHO)

Asssisted by: Government of India, Ministry of Health, Government of India, Ministry of Environment & Forests, Industrial Credit and Investment Corporation of India (ICICI), Indian Oil Corporation, Johns Hopkins University (USA), Friends of Lead-Free Children (USA).

DAY 1:

9.30 – 12:30

1. CEREMONIAL

a) Welcome Address (Admiral S. Dawson, Chairman, Project Lead-Free)

b) Introductory Remarks (Dr. A. George, Managing Trustee, The George Foundation)

c) Opening Remarks by co-sponsors (Ms. M. Nishimizu, The World Bank; Dr. H. Falk, CDC; Mr. William Nitze, EPA, Mrs. P.K. Singh, WHO)

d) Remarks by dignitaries

Tea Break: 11.00-11.30

11:30-12:30 *Banquet Hall*

f) Commencement Speech: "Long-term Impact of Lead Poisoning on the Workforce and Society" (Ms. P.K. Singh, WHO)

g) Key-note Speech: "The importance of and considerations in implementing a national lead poisoning prevention program" (Dr. H. Falk, CDC)

12:30 – 2:00 Luncheon and speech: *Banquet Hall*

History of Lead poisoning in The World (Dr. H. Needleman)

2:00 – 5:00

2. NATURE AND EXTENT OF LEAD POISONING

2:00 - 2:30 *Banquet Hall*

a) Findings of Project Lead-Free (Dr. T. Venkatesh)

2:30 - 3:00 *Banquet Hall*

b) Interpretation and use of blood lead data (Dr. T. Matte)

3:00 - 3:30 *Banquet Hall*

c) Sources and Pathways of Lead in the Environment (Dr. J. Schwartz)

3:30 - 5:00

d) Panel Discussions (concurrent):

i) How to measure lead in humans, and to organize and conduct large scale screening (Dr. W. Matson, Dr. M. Chaudhary-Webb, Dr. P. Parsons, Dr. D.K. Saxena, Dr. S. Cummins, Dr. J. Vaz, Dr. S. Rajarathanam, Dr. R. Parr) - *Chanakya A.*

ii) Investigating environmental lead sources and pathways (Dr. B. Gulson, Dr. B. Sonawane, Dr. I. Romieu, Dr. G. Noonan, Dr. X. M. Shen, Dr. S. Akbar, Dr. D.J. Parikh) - *Chanakya B.*

iii) Empirical evidence on lead sources and pathways in India (Dr. T. Venkatesh, Dr. S. Tandon, Ministry of environment, Dr. D.C. Sharma, Dr. V. Iyengar, Dr V. Potula, Dr. S.J.S. Flora) - *Convention A*

DAY 2:

9:30 – 12:30 *Banquet Hall*

3. ENVIRONMENTAL SOURCES AND PREVENTION APPROACHES

9:30 -10:00 *Banquet Hall*

a) Lead Poisoning Prevention, U.S. (Dr. E. Silbergeld)

10:00 -10:30 *Banquet Hall*

b) Lead Poisoning Prevention, Latin America (Dr. M. Hernandez-Avila)

10:30-11:00 *Banquet Hall*

c) Lead Poisoning Prevention, Asia (Dr. S. Tridech)

11:00-11:30 *Banquet Hall*

d) Phasing out lead from gasoline (Ms. M. Lovei)

11:30-12:30

e) Panel Discussions (concurrent):

i) Non-fuel lead sources in developing countries (Dr. Li Zhu, Dr. Abdel-Nasser, Dr. M. K. Sudarshan, Dr. H. Parmesh, Dr. C.V. Anand, and Mr. J. Rochow) - *Chanakya A.*

ii) Transition to unleaded fuels (Dr. B. Sonowane, Dr. S.N. Roy, Ms. Lovei, Mr. C. Prakash, Dr. T.K. Bandyopadhyay, Dr. M. Ahmed, Mr. P.N. Rangan) - *Chanakya B.*

iii) Educating a low literacy population on prevention: preventive measures to be taken by community and family (Dr. J. Mitra, Mr. A. Fast, Dr. N.S. Kumar, Dr. S.J.S. Flora, Dr. J. Phoenix, Dr. M. Hernandez-Avila, Dr. S. Akbar) - *Convention A.*

12:30 – 2:00 Luncheon and speech: *Banquet Hall*

Nutrition and lifestyle impacts on lead poisoning levels (Dr. P. Nair)

Lead Poisoning Research and Public Health Issues (Dr. P. K. Seth)

2:00 – 5:00

4. HEALTH EFFECTS, DIAGNOSIS, AND TREATMENT

2:00 - 2:30 *Banquet Hall*

a) Impact of lead on behavior and learning of children (Dr. H. Needleman)

2:30 - 3:00 *Banquet Hall*

b) Clinical Profile of lead poisoning (Dr. D. Nag)

3:00 - 3:30 *Banquet Hall*

c) Role of physician: anticipatory guidance, diagnosis and follow-up of patients (Dr. R. Reigart)

3:30 - 5:00

d) Panel Discussions (concurrent):

i) Role of Health Care System (Dr. S. Cummins, Dr.A.F.A. Mascarenhas, Dr. V. John, Dr. Xiao-Ming Shen, Dr. M.K. Sudarshan, Dr. C. Pertowski) - *Chanakya A*

ii) Health Effects of Lead in Children and Adults (Dr. H. Needleman, Dr. R. Reigart, Dr. D. Nag, Dr. R. Chatterjee, Dr. P.P. Maiya, Dr. D.J. Parikh) - *Chanakya B*

iii Treatment protocols (Dr. W. Rogan, Dr. T. Rozema, Dr. S. Tandon, Dr. M. Markowitz, Dr. P.S. Shankar, Dr. B. Gulson) - *Convention A*

DAY 3:

9:30 – 12:30

5. DEVELOPING A NATIONAL LEAD POISONING PREVENTION AND TREATMENT PROGRAM

9:30 - 10:00 *Banquet Hall*

a) Setting Priorities and roles for Government, Private Sector, NGOs (Dr. S. Cummins)

10:00 - 10:30 *Banquet Hall*

b) Standards, Legislation and Enforcement Issues (Mr. D. Ryan)

10:30 - 11:00 *Banquet Hall*

c) Developing and Implementing a National Plan – Discussion Points (Dr. A. George)

11:00 - 12:30

d) Workshops (concurrent; listed below)

12:30 – 2:00 Luncheon and speech. : *Banquet Hall*

Lessons learned from environmental policies in other countries that could be beneficial to establishing a national lead prevention program (Mr. B. Nitze, EPA) National commitment to preventing lead poisoning: a challenge for the next decade (Dr. N.K. Ganguly)

2:00 - 3:30 Workshops (continued):

i) Screening standards, laboratory requirements, and coverage in a National Program (Dr. R. Kaufmann, Mr. A. Fast, Dr. P. Parsons, Dr. Chaudhary-Webb, Dr. R. Reigart, Dr. R.K. Choudhury, Dr. W. Matson, Dr. V. Iyengar) - *Chanakya A*

ii) Public health policies on treatment protocols and availability of services (Dr. X.M. Shen, Dr. M. Markowitz, Dr. W. Rogan, Dr. D. Nag, Dr. S. Tandon, Mr. A. Perti, Dr. T. Rozema, Dr. S. Roy, Dr. M. Lahiri) - *Chanakya B*

iii) Monitoring environmental sources, setting standards and legislation (Mr. R. Ackerman, Dr. B. Sonawane, Dr. J. Schwartz, Dr. Gajghate, Dr. D.C. Sharma, Dr. Shivalingaiah, Dr. R. Parr, Dr. T.K. Bandyopadhyay, Dr. M. Ahmed) - *Convention A*

iv) Effective implementation of Leaded fuel phase-out (Mr. J. Shah, Ms. M. Lovei, Mr.C.Prakash, Mr. P.V.R. Ayyar, Mr. M.K. Suri, Mr. M.N. Muralikrishna, Mr. B. Ramaiah, Ministry of Environment rep.) - *Convention B*

v) Worker safety and health, and regulatory enforcement (Dr. M. Hernandez-Avila, Dr. G. Noonan, Dr. Abdel-Nasser, Dr. T. Matte, Dr. E. Silbergeld, Dr. D.J. Parikh, Dr. Li Zhu, Dr. U.K. Bhadra, Dr. H.N. Saiyed, Ministry of Health rep.) *Banquet Hall*

vi) Role of Ministries of Health and Environment: national and state (Dr. S. Cummins, Mr. B. Nitze, Dr. I. Romieu, Dr. H. Falk, Dr. V. Jagadeesan, Dr. R.K. Chandoke, Dr. M.Z. Hasan, Dr. B. Sengupta, Ministries of Environment and Health reps.) - *Suite 600*

vii) Role of NGOs, foundations and private sector (Dr. C. Pertowski, Dr. H. Needleman, Dr. P. Nair, Dr. Ananthanarayanan, Dr. M.S. Mahadeviah, Dr. C. Mukhopadhyay, Mr. J. Rochow) - *Board Room*

3.45-5:15 Workshop Reports *Banquet Hall*

(Moderators: Dr. R. Kaufmann, Mr. S. Akbar, Dr. B. Sonawane, Dr. T. Venkatesh)

7:00 – 9:30

6. CONCLUDING CEREMONY AND DINNER

a) Introductory remarks (Admiral S. Dawson)

b) Keynote Speech (Mr. R. Ackermann, The World Bank)

b) Awards

c) Vote of Thanks (Dr. A. George)

AFTER-SESSION PRESENTATION OF RESEARCH PAPERS

The following presentations will be made from 5.15 PM to 6.15 PM on Day 1 and Day 2 as indicated. Each individual will have 10 minutes to present the paper followed by 10 minutes for questions and answers.

Day 1: Chanakya A

1. Shri. Rakesh Kumar
   Scientist & Head, National Environmental Engineering Research Institute, Mumbai
   Topic - Urban Pollution from Traffic.

2. Dr. D. K. Biswas
   Associate Director & Head, Naval Metallurgical Research Lab, Mumbai.
   Topic - Use of Lead in Marine Applications.

3. Dr. P. S. Ramanathan
   Director, Gharda Chemical Ltd., Mumbai
   Topic – Lead Poisoning – Spotlight on analytical procedures for total lead. Isotopic ratio and Specification and an overview of the Indian scene and preventive measures.

Day 1: Chanakya B

4. Dr. Ananthanarayan
   Director, All India Institute of Public Health, Calcutta
   Topic:

5. Dr. S. K. Tyagi
   Scientist, Central Pollution Control Board, Delhi
   Topic - Impact of Phasing out of Lead in Petrol in Delhi – A case study

6. Dr. A. M. Cherian,
   Prof. & Head of Medicine-II/Thoracic Medicine & Rheumatology, Christian Medical College
   Topic - A case series-clinical presentation of 6 cases on Lead Poisoning.

Day 1: Convention A

7. Dr. Kalpana Balakrishnan
   Head, Environmental Health Engineering Cell,
   Sri Ramachandra Medical College, Chennai
   Topic - Health risk assessment for Lead exposure.

8. Ms. Sukanya Boonchalermkit
   Chief of Toxic Substance Section, Dept. of Environmental Quality Promotion, Thailand
   Topic: Study on lead residue from battery in Pathumthani province by using hair sample.

9. Mr. Mike van Alphen
   Manager, Environmental Monitoring, Public & Environmental Health Service, Australia
   Topic: Why measure Pb deposition rates over short time periods.

Day 2: Chanakya A

10. Prof. Yona Amitai
    Prof., Dept. of Pediatrics, Hodassah University Hospital, Israel
    Topic: Prenatal Lead Exposure in a Highly Polluted Area in Kazakhstan

11. Dr. Ann Carroll
    Head of State-wide Lead Poisoning Prevention, Australia
    Topic: Lead prevention & treatment problems in Australia

12. Dr. Vijo Potula
    Visiting Scientist, Harvard School of Public Health
    Topic: Occupational and Lifestyle Determinants of Blood Lead Levels among Men in Madras.

Day 2: Chanakya B

13. Dr. Zheng Xingquan
    Institute of Environmental Health Monitoring, China
    Topic:

14. Dr. Janet A Phoenix
    Manager of Public Health Programs, Environmental Health Center of the National Safety Council.
    Topic: Designing Lead Poisoning Prevention Education Programs

15. Prof. B.S. Murthy
    Visiting Professor, Santa Clara University, U.S.A
    Topic : Automobile Related Problems of Lead Poisoning

SPEAKERS & PANELISTS

Dr. C.V. Anand, PhD, is Professor, Department of Biochemistry, M.S. Ramaiah Medical College, Bangalore. His research interests are in biochemical changes on lungs, heart, kidney and platelets brought about by cigarette smoke. He has over 25 years of undergraduate and postgraduate teaching experience.

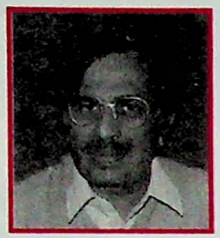
Dr. M. Abdulla is a member of the newly inaugurated trace element institute of UNESCO in Lyon, France, and is also in the staff of the University Hospital in Lund, Sweden. He has done extensive work in the field of lead poisoning, and his doctoral thesis was on the interaction of lead and zinc.

Dr. M. Ahmed, MBBS, is the Chief Medical Officer, Indian Oil Corporation Ltd., Barauni Oil Refinery, Bihar. He is a member of the Committee on Occupational Health and Safety set up by Oil Industry Safety Directorate, and has written papers in occupational health.

Mr. Richard Ackermann is Sector Manager, Environment, for the South Asia Region in The World Bank. In that capacity, he has operational responsibility for the environmental aspects of the Bank's Regional portfolio of over 200 investment projects. Prior to this appointment, he was Chief of Technology and Pollution Policy in the Environment Department, where he was responsible for World Bank policy on urban and industrial environmental issues, including a growing program to promote partnerships between governments and the private sector.

Dr. Abdel Nasser Mohamed Ahmed serves as the Director of the Field of Epidemiology Training Program (FETP) in the Ministry of Health & Population in Cairo, Egypt. His recent field work has included surveys of Pb tocicity, investigations of outbreaks, and establishing and strengthening disease surveillance.
Dr. Abdel Nasser is a physician with subspecialty training in Pediatrics and a Master's degree in Epidemiology, and is a senior member of Egypt's Department of Maternal and Child Health.

Dr. Sameer Akbar is an Environmental Specialist with The World Bank in India. Previously, he worked as a research associate at the Imperial College Centre for Environment Technology, UK. His doctoral thesis was on the assessment of respiratory damages in relation to particulate air pollution in Delhi.



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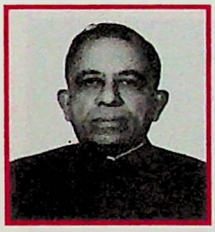
Dr. R.K. Chandoke, the Co-ordinator of Delhi Chapter of Project Lead-free, is the Head of Pathology at Indira Gandhi E.S.I Hospital, Delhi. He is a practising Pathologist and Microbiologist who has spent time creating awareness on lead poisoning among children and industrial workers.

Mr. Carter Brandon is a Senior Environmental Economist at The World Bank, and leads the economics team in the South Asia Environment Unit. He manages the World Bank environmental activities in India and Bangladesh. He was educated at Harvard and Oxford Universities, and was a Rhodes Scholar.

Dr. Susan K. Cummins is the Chief of the Childhood Lead Poisoning Prevention Branch of the California Department of Health Services. Dr. Cummins is currently the Chair to the Advisory Committee on Childhood Lead Poisoning Prevention for the US Centers for Disease Control and Prevention. As a pediatrician and epidemiologist, she has done extensive work in child development and developmental disabilities.

Dr. Ranjana Chatterjee is Associate Professor and Head of the Department of Paediatric Medicine at R.G. Kar Medical College, Calcutta. She specialises in nutritional problems in children, and has published in several Indian journals.

*Mr. **Alan B. Fast*** has been in the field of lead poisoning for several years, serving the city of New York. He founded and managed blood screening, educational, and technical programs, and is presently the Deputy Director of the Department of Housing Preservation and Development's Lead Hazard Reduction Program.



Admiral O.S. Dawson,
PVSM, AVSM, was the former Chief of Naval Staff, and the Indian High Commissioner in New Zealand. As Chairman of Project Lead-Free, he was responsible for organising the screening for blood lead levels by several clinics in six major cities in India, and for gaining awareness among Government authorities and the general public.

Dr. S.J.S. Flora, PhD, is Scientist 'D' and Assistant Director, Division of Pharmacology and Toxicology, Defence R&D Establishment, Ministry of Defence, Gwalior. His current areas of research interest include toxicology of lead, cadmium, and arsenic, and was recently awarded the prestigious Shakuntala Amir Chand Prize by the Indian Council of Medical Research for his contribution in the area of Clinical Therapeutic Measures in Lead Poisoning. He has published widely, and is in the editorial board of the Journal of Occupational Health, Japan.

Dr. Henry Falk is the Director of the Division of Environmental Hazards and Health Effects, and Acting Director of the proposed Division of Emergency and Environmental Health Services, National Center for Environmental Health, US Centers for Disease Control and Prevention. He holds an M.D. from the Albert Einstein College of Medicine, New York, and an M.P.H. from the Harvard School of Public Health.

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Dr. Brian Gulson is the principal investigator for an international multidisciplinary project in Australia, Biokinetics of Lead in Human Pregnancy, supported by NIEHS. His main interests are in the application and development of lead isotope fingerprinting methods in environmental and health problems, especially associated with mining, smelting and urban areas.

Dr. Mauricio Hernandez, PhD, is currently Visiting Professor at the Rollins School of Public Health, Emory University and also employed with the Mexican National Institute of Public Health. He has worked several years addressing lead epidemiology and its control in Mexico. He further specializes in Pathology, and holds a doctoral degree from the Harvard School of Public Health.

Dr. N.K. Ganguly, M.D., is Director General, Indian Council of Medical Research, New Delhi. His areas of specialisation are microbiology and immunology, has published widely, and has over 30 years of teaching and administrative experience in several key positions. He also holds the position of Director-in-charge, National Institute of Biological, New Delhi.

Dr. Venkatesh Iyengar, DSc, PhD, is a specialist in Trace elements in Environment and Nutrition, Gastro-intestinal absorption of elements, environmental pollution by heavy metals, and biological specimen banking for environmental and nutritional health monitoring. He has published over 130 papers, including 6 books, and is in the editorial board of several professional journals.

Dr. Abraham M. George is the founder and benefactor of The George Foundation. He is currently the Vice-Chairman of SunGard Treasury Systems, an operating unit of SunGard, a NYSE traded company specialising in international finance. Previously he was the CEO of Multinational Computer Models, Inc., a company that he founded which was later acquired by SunGard, and was also a Managing Director at Credit Swiss First Boston, a global investment bank. He is the author of three books and numerous articles in international finance, and holds an MBA, MS and PhD from Stern School of Business, New York University.

Dr. Richard J. Jackson has been Director of the National Center for Environmental Health (NCEH), US Centers for Disease Control and Prevention, since 1994. He is a physician epidemiologist, trained in pediatrics, and has held leadership public health positions in California in both infectious disease and environmental health. He also serves on two health policy committees related to U.S.-Russia relations — one related to radiation and the other related to overall health and environment.

Dr. Victor John, MD, is Senior Consultant Paediatrician & Head of Department of Paediatrics at Bangalore Baptist Hospital, Bangalore. He has taught interns and House-surgeons for several years, and has set up a Neonatal Intensive Care Unit.

Dr. Rachel Kaufman, PhD, is Chief, Epidemiology Section, Lead Poisoning Prevention Branch in the National Center for Environmental Health, US Centers for Disease Control and Prevention.

Dr. V. Jagadeesan is currently Deputy Director in the Drug Toxicology Division at the Food and Drug Toxicology Research Centre, National Institute of Nutrition, Hyderabad. His interests include preclinical toxicity testing of drugs and biopharmaceuticals, occupational toxicology and molecular biology.

Ms. Masami Kojima is a Refining/Environmental Specialist at The World Bank working on the initiative on the elimination of lead in gasoline in Latin America and the Caribbean. Previously she was Associate Professor of Chemical Engineering at the University of Cape Town.

Dr. Lekha Keister, Ph.D., is project manager of the U.S. chapter of The George Foundation and a member of the foundation's Board of Trustees. She is currently Manager of International Data and Information Access Services at SunGard Treasury Systems Inc., in Fairfield, New Jersey. She has been a faculty member at colleges and universities in New Jersey and Virginia and has also worked as an administrator at New Jersey higher education institutions, and most recently at the University of Medicine and Dentistry of New Jersey.

Dr. Madhurima Lahiri, M.D., is Professor, Department of Paediatrics Medicine, Dr. B.C. Roy Memorial Hospital for Children, Calcutta. Her research activities have been in the fields of Gastro-intestinal disorder and Infant Nutrition. She has over 20 years of undergraduate and postgraduate teaching experience.

Dr. Zhu Li is Professor of Epidemiology and Chairman of the Department of Health Care Epidemiology at Beijing Medical University. He is also Director of National Reference Laboratory on Reproductive Health Research, and Executive Deputy Director at National Center for Maternal and Infant Health. He is the Principal Investigator for the US-China Collaborative Project for Birth Defects and Disabilities Prevention.

Dr. Wayne Matson is the co-founder and Technology Director of ESA Inc., USA, a company that offers the blood analyser for detecting blood lead levels. He is also in the affiliate faculty of the Molecular Bioscience and Technology Institute, Virginia, and is member of a number of collaborative research projects with Massachusetts General Hospital, Cornell University Medical Center, and the Basic Medicine faculty of the State University of Moscow.

Dr. Magda Lovei, MBA, PhD, is an environmental economist at The World Bank working on pollution abatement policies, financing, transport-related environmental issues, and institutional and regulatory aspects of environmental management. Since 1995, she has been spearheading the Bank's work on supporting the global phase-out of lead from gasoline.

Dr. Thomas Matte, MD, MPH, is a medical epidemiologist at the CDC's National Center for Environmental Health. His work has included policy development issues concerning Lead exposure problems in the US, Mexico and Jamaica. His work in public health includes the development of methods for surveillance of occupational asthma and other work related conditions, and on prenatal and early life environmental factors.

Dr. Morri Markowitz, M.D., is currently a professor of pediatrics at the Albert Einstein College of Medicine in New York. He is also the Director of Pediatric Environmental Sciences Clinics at the Montefiore Medical Center, New York, and in that position he has cared for thousands of lead poisoned children. He has worked to develop better diagnostic and treatment methods for children.

Dr. P.P. Maiya is Professor and Head, Department of Pediatrics & Neonatology, at M.S. Ramaiah Medical College, Bangalore. He is a fellow of the Indian Academy of Medical Speciality, and has published several articles on rotavirus diarrhoea.

Dr. A.F.A. Mascarenhas, MS FRCS, is Professor Emiritus of Surgery at St. Johns Medical College Hospital, Bangalore, and Senior Consultant at Cantonment x-ray and Laboratory. Previously, he was the Principal at St. Johns Medical College. He has published widely in the fields of Surgical Infection and severe Intraabdominal sepsis.

Dr. Padmanabhan P. Nair, PhD, is currently Adjunct Professor at the School of Hygiene and Public Health, Johns Hopkins University, Maryland. His research interests include pathophysiology of the gastrointestinal tract, molecular basis of nutritional disease, and nutritional aspects of environmental and lifestyle associated diseases. He has published over 200 papers in professional journals and is member of several medical and research associations.

Dr. M.S. Mahadeviah is Senior Professor in Pediatrics at Kempegowda Institute of Medical Sciences, Bangalore. Previously, he was Professor and Head of Pediatrics at the same institute, and has worked also at Albert Einstein College of Medicine, New York. One of his specialities is Childhood Disabilities.

Dr. Herbert L. Needleman, M.D., is a Professor of Psychiatry and Pediatrics at the University of Pittsburgh and is a member of the Institute of Medicine of the National Academy of Sciences. He has been involved for more than twenty years in investigations of lead at low dose and the neurobehavioral function of children.

Mr. M.N. Muralikrishna is Vice President, Technology, with TVS-Suzuki Limited. He has been in the automobile industry, particularly with 2-wheelers, for the past 40 years. He is responsible for product development and R&D for the company.

Dr. Mieko Nishimizu, PhD, is Vice President for South Asia Region of The World Bank. Previously she served as Director, South Asia Country Department, and as Director of the Risk Management and Financial Policy Department of the Bank. Prior to joining the Bank, she taught economics at Princeton University, and holds a PhD in economics from Johns Hopkins University.

Mr. William A. Nitze is Assistant Administrator for International Activities at the US Environmental Protection Agency. Previously, as Deputy Assistant Secretary of State for Environment, Health and Natural Resources, he had a lead role in international negotiations on global issues such as climate change, ozone layer protection, biotechnology and the conservation of tropical forests. He is an alumnus of Wadham College, Oxford, and Harvard Law School.

Mr. Stephen Null is the founder and Director of Friends of Lead Free Children, a not-for-profit organization in New York, which has helped establish lead screening programs in developing countries. He was responsible for the first lead screening program in Dominican Republic in the cities of Santo Domingo and Santiago. He has also assisted programs in Thailand and facilitated the supply of lead screening equipment for Project Lead Free. His organization has been working closely with The George Foundation on this project.

Dr. Gary P. Noonan is an Environmental Health Scientist at the US Centers for Disease Control and Prevention. With a background in Industrial Hygiene, he has been involved in numerous field studies on the identification of environmental sources of lead intoxication in Russia, Egypt, Chile, Mexico and the Untried States.

Dr. Robert Parr, PhD, is a staff member of the International Atomic Energy Agency. For the past ten years, he has served as Head of the Section of Nutritional and Health-Related Environmental studies, and specialises in the use of nuclear and isotopic techniques for monitoring non-radioactive pollutants. He has organised several international symposia – most recently in Hyderabad, on Harmonisation of Health-Related Environmental Measurements.

Dr. Devika Nag, MD, is Professor and Head, Department of Neurology, King George's Medical College, Lucknow. Her special interests are in Environmental Neurotoxicity, neuroecology, and molecular biology in area of peripheral makers in neurodegenerative and neurotoxic disorders of central nervous system. Educated at Tufts and Harvard Universities, she has published widely, and has been in the editorial board of several journals.

Dr. Patrick J. Parsons, PhD, is the Director of the State of New York's Lead Poisoning Laboratory, and chairs the National Committee for Clinical Laboratory Standards' sub-committee on Analytical Methods for the determination of Lead in blood and urine. He was a visiting fellow at the National Institutes of Health, Maryland, and holds a doctoral degree in Inorganic Biochemistry from the University of London.

Dr. Carol Pertowski, M.D., is currently the Chief, Surveillance and Programs Branch, National Center for Environmental Health, US Centers for Disease Control and Prevention. In her present capacity, she is responsible for the development of surveillance of health conditions related to the environment, including childhood lead poisoning, and maintains a database with reports on nearly 3 million children screened for lead poisoning.

Dr. H. Paramesh, MD, is the Medical Director and Pediatrician-in-Chief of Lakeside Medical Center & Hospital, Bangalore. He recently chaired an international conference on environment and human health, and has widely published papers and articles on respiratory related areas.

Dr. Chandra Prakash is Vice-President of Environmental and Vehicular/ Fuel Regulations at Polar Molecular Corporation, Canada. His previous position was Head of Transportation Fuels with the Federal Department of Environment in Canada, where he provided technical expertise and guidance related to the use of various transportation fuels and their effect on emissions. Before joining Environment Canada, he worked with the Department of Energy, Mines and Resources, and taught at the University of Ottawa.

Dr. Janet A. Phoenix, MD MPH, is Manager of Public Health Programs for the Environmental Health Center of National Security Council. She has extensive experience in designing lead poisoning prevention education programs for public and professional audiences. Her previous international experience in this field includes work in Poland, Egypt and Hungary.

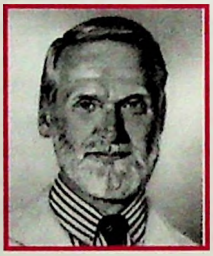
Dr. D.J. Parikh, PhD, is Deputy Director at the National Institute of Occupational Health, Ahmedabad. He has over 25 years of experience in the fields of hygiene, toxicology and environmental pollution, and has published numerous research papers in professional journals. He served as a Co-investigator of the Global Environmental Monitoring System (GEMS) for the assessment of human exposure to Lead and Cadmium

Dr. Viji Potula, PhD, is presently a Visiting Scientist at Harvard School of Public Health with a background in epidemiological and toxicological areas. She specializes in the health effects of automobile pollution, and has done studies related to this in Madras.

Dr. J. Routt Reigart, Professor of Pediatrics, is currently Director of General Pediatrics and Director of Emergency Pediatrics at the Medical University of South Carolina. His major clinical interests are general pediatrics and toxicology, and has worked extensively on lead prevention activities. He is also the Chairman of the Board of the Children's Environmental Health Network, and Chairman of the USEPA Children's Health protection Advisory Committee.

Dr. S. N. Roy is Deputy General Manager , Occupational Health & Safety, Indian Oil Corporation Limited (Refineries Division HQ), New Delhi. He has presented papers at several conferences on Occupational Health & Safety.

Mr. K.W. James Rochow is Director of International Programs for the Alliance To End Childhood Lead Poisoning, Washington, D.C., where he manages its initiatives on an international action plan for preventing lead poisoning. He is a former Assistant Attorney General of Pennsylvania, and has handled landmark cases in the U.S. Supreme Court on environmental issues. He also helps train developing country environmental personnel for the Environmental Law Institute and the Agency for International Development.



Dr. Theodore C. Rozema, MD, is a Lecturer in Integrative Medicine for the Medical Association of Jamaica. He is also Secretary of the American Board of Chelation Therapy, President of the American Association of Alternative Medicine, and President of the Health Research Foundation. He has done extensive work on the administration of EDTA and other Chelation Agents for metal toxicity.

Dr. Walter J. Rogan, MD, is an epidemiologist at the National Institute of Environmental Health Sciences, USA. He is Project Officer for the NIEHS-sponsored Treatment of Lead-exposed Children (TLC) trial, a study of whether oral chelation prevents or reduces lead associated developmental delays in toddlers.

Mr. Don Ryan is Executive Director and one of the founders of the Alliance to End Childhood Lead Poisoning, Washington, D.C. As Chair of the Implementation Committee of the National Title X Task Force, he has been instrumental in developing programs and policies to prevent lead poisoning from lead-based paint. Previously, he worked on national environment, public health, and energy issues both in executive branch agencies and as professional staff of the US House of Representatives Appropriation Committee.

Dr. Sheila Rajaratnam, M.D., D.G.O., is Professor of Obstetrics & Gynaecology at K.J. Hospital, Chennai. She was trained in Laproscopy at Johns Hopkins University, and in Obstetrics and Gynaecology at Prince of Wales University, Hongkong. She has over 30 years of undergraduate and postgraduate teaching experience.

Mr. B. Ramaiah is currently working in the Pollution Control Board in Karnataka. His background is in environmental management, with wide experience in the implementation of pollution control laws, monitoring of systems and preparation of feasibility reports.

Mr. P.N. Rangan is a Technical Advisor at Volvo India Private Limited. He has twenty-five years of experience in the automotive field, having worked in the R&D of several organisations. His contributions have been in the field of component design and testing, and he has been involved in legislative activities for bringing about safety and environmental standards.

Mrs. Poonam Khetrapal Singh is Executive Director, Sustainable Development and Healthy Environment, at the World Health Organisation (WHO) based in Geneva. She is an international health management specialist, and has held a variety of senior positions in the Indian Administrative Service, including that of Secretary of Health and Family Welfare for Punjab. Previously, she worked with the financial sector and The World Bank on various capacities.

Dr. Isabelle Romieu is a medical epidemiologist with the Pan American Health Organization (PAHO/WHO). Since 1990, she has been working on environmental health problems in the Latin American region, and has conducted studies to evaluate the extent of lead poisoning and pathways. She is currently a visiting scientist at the National Center for Environmental Health (NCEH) of the Centers for Disease Control and Prevention.

Dr. Yasmin von Schirnding is in the department of Sustainable Development and Healthy Environments at the World Health Organisation, Geneva. Previously, she was responsible for the Office of Global and Integrated Environmental Health. Before joining WHO, she was Director of Environmental Health for the City of Johannesburg, South Africa. Her doctoral studies were on the epidemiology of childhood lead exposure, and she has a special interest in the implications of research for policy.

Dr. Jitendra Shah, MBA, PhD, is a specialist in integrated environmental policy assessment and urban air quality management for The World Bank in relation to investment projects in South Asia. He also works on institution and capacity building in developing countries, promotion of environmental awareness and education, air pollution modeling and monitoring, unleaded gasoline, vehicular emissions and bio-mass burning reduction.

Dr. P.S. Shankar, M.D., is Dean, Professor and Head of the Department of Medicine, K.J. Somaiya Medical College, Mumbai. He is the recipient of the Dr. B.C. Roy National award for eminent medical teacher. He has authored many books and published over 250 scientific papers in medical journals.

Dr. Ellen K. Silbergeld, PhD, is Professor of Epidemiology and Toxicology at University of Maryland Medical School, Maryland. She is also an adjunct professor of Health Policy and Environmental Health Sciences at Johns Hopkins University. Her research interests have focussed on mechanisms and epidemiology of lead poisoning, and on mechanisms of other environmental toxicants. She has served on the editorial board of nine biomedical journals, and has authored over 200 scientific articles.

Dr. B. Sengupta is a Member Secretary with the Central Pollution Control Board. His areas of specialisation include industrial air pollution control, air quality monitoring and assessment, and industrial emission standard development.

Dr. Babsaheb Sonawane, PhD, is Chief, Effects Identification and Characterisation Group, National Center for Environmental Assessment, Washington, D.C., with responsibilities to identify and characterise adverse health and ecological effects from exposure to environmental agents. Prior to joining US Environmental Protection Agency, he worked at the Food and Drug Administration and as a faculty member at the University of Pennsylvania. He serves as a member of the Indo-U.S. Joint Sub-commission on co-operation in Science and Technology.

Dr. D.C. Sharma, PhD, is a Zonal Officer with the Central Pollution Control Board. He has worked in the areas of consent management, ambient air and water quality monitoring, and cleaner technologies of production.

Dr. B. Shivalingaiah, PhD, is the executive head of the Karnataka State Pollution Control Board. He has over 25 years of teaching experience in environmental engineering and pollution control technology and management.

Dr. S. Narayani Shivkumar, MD, is the Chief Pathologist at Gurunank Hospital in Bombay. Previously she worked in the Armed Forces Medical College in Pune, and has presented papers in Neuro-Pathology and related areas.

Dr. H.N. Saiyed, PhD, is the Director, National Institute of Occupational Health, Ahmedabad. He has done extensive research in the field of occupational health, particularly on dust exposure related lung diseases, and has published widely in international journals.

Dr. P.K. Seth, PhD, is Director at Industrial Toxicology Research Centre, Lucknow. Previously, he has worked as Visiting Professor and Scientist at several American universities and the US Food and Drug Administration. His research interests are in biochemical toxicology, neurotoxicology and developmental toxicology. He has published widely and holds three patents.

Dr. Joel Schwartz is an Associate Professor of Environmental Epidemiology at the Harvard School of Public Health and Associate Professor of Medicine at the Harvard Medical School in Boston. His research includes work on health effects of various environmental pollutants, water contamination and lead toxicity. His research also explores the latest methods in environmental epidemiology.

Dr. D. Krishna Saxena, PhD, is Head, Embryotoxicology Division, at Industrial Toxicology Research Division, Lucknow. He has done studies in reproductive toxicity in reference to heavy metals, published widely, and was the principal investigator for the ICMR scheme entitled "Effect of Lead on developmental process of iron deficient rats".

Dr. Xiaoming Shen, MD, PhD, is Director and Chief Executive Officer of Shanghai Children's Medical Center, China. He has done extensive work on lead poisoning, and his interests include prenatal lead exposure and neurobehavioral development of children.

Dr. Jude W. Vaz is a Consultant Pathologist with the Holy Family Hospital, Mumbai, who conducted the Project Lead Free study in the city. Previously he was the Chief Pathologist at Al Salam Medical Centre in Saudi Arabia.

Dr. S.K. Tandon is a Scientist and Deputy Director at the Industrial Toxicology Research Centre, Lucknow, India. He has done significant work in the field of toxicology of metals and prevention/therapy of industrial metals poisoning, and is a Fellow of the Society of Toxicology, India. He holds a PhD in organometallic chemistry and DSc in chemical toxicology.

Dr. T. Venkatesh, PhD, is Professor & Head of the Department of Biophysics at St. John's National Academy of Health Sciences, Bangalore. He was responsible for directing the screening under Project Lead-Free, and has done significant work on lead poisoning and other toxicants.

Dr. Saksit Tridech is Secretary General of the Office of Environmental Policy and Planning, Ministry of Science, Technology and Environment, Bangkok, Thailand. Previously he held numerous positions with responsibilities in dealing with air and noise pollution, water quality, and environmental quality standards.

Dr. Madhu Chaudhary **Webb** is a chemist with the Centers for Disease Control and Prevention (CDC). She is currently working in the trace metals labs for the National Center for Environmental Health, US, on various research and service programs.

PROBLEM OF LEAD POISONING

Lead occurs naturally in the earth's crust. When ingested, inhaled, or absorbed through skin, lead is highly toxic to humans. Lead's toxicity has been known for thousands of years; Greek physicians made the first clinical description of lead poisoning in the first century B.C.

Lead is not biodegradable. It persists in the soil, in the air, in drinking water, and in homes. It crosses all social, economical and geographical lines. It never disappears, it only accumulates where it is deposited and can poison generations of children and adults unless properly removed.

At high levels, lead poisoning causes coma, convulsions and death. At low levels – levels far below those that present obvious symptoms – lead poisoning in childhood causes reductions in IQ and attention span, reading and learning disabilities, hyperactivity, impaired growth, behavioral problems, and hearing loss. These effects are long-term and may be irreversible.

World-wide, seven sources appear to account for most lead exposure:

1) gasoline additives;
2) food can soldering;
3) lead-based paints;
4) ceramic glazes;
5) drinking water systems; and
6) cosmetic and folk remedies.
7) cooking utensils

Other significant exposures result from inadequately controlled industrial emissions from such operations as lead smelters and battery recycling plants, which contaminate environments and people in the surrounding areas. The highest level of environmental contamination is found to be associated with uncontrolled recycling operations and the most highly exposed adults are those who work with lead.

Developed countries like the US, UK and Germany have taken aggressive steps to combat lead poisoning. In developing countries, however, actions have been slower and sporadic. Within the last decade, reports of lead poisoning in humans have poured in particularly from the developing countries faced with environmental and occupational lead exposure.

In India, as in most developing countries, the main source of lead pollution is automobile exhaust. Although India issued in February 1990 its first National Emission Standards for lead and other pollutants, the recommended permissible limits of lead (0.56 g/L) are still very much higher than those of developed countries like the US, UK, and Germany. In the US, the virtual elimination of leaded gasoline resulted in a 77% decrease in the average blood lead level of the population between 1976 and 1991. In the UK, a 50% drop in gasoline lead levels corresponded with a 20% drop in blood lead levels.

The scope and nature of lead poisoning that recent studies have uncovered are alarming. Here are some hard facts:

- No level of lead in blood is safe or normal. The disturbing fact is that exposure to extremely small amounts can have long-term and measurable effects in children while at the same time causing no distinctive symptoms.
- Once lead is absorbed into the bloodstream, some of it is filtered out and excreted, but the rest gets distributed to the liver, brain, kidneys and bones.
- Lead causes anemia in both children and adults by impairing the formation of oxygen-carrying molecules, beginning at exposures of around 40ug/dl. In adults, small but significant increases in blood pressure result from exposures as low as 5 ug/dl, with no evidence of a threshold below which lead does not affect blood pressure.
- Other adverse effects in adults include kidney disease and impaired fertility. Hypertension caused by lead exposure contributes to thousands of deaths every year, particularly in men between the ages of 35 and 50.
- Children and pregnant women are particularly susceptible to lead poisoning. Children's digestive system absorbs up to 50% of the lead they ingest. The high retention occurs from birth to age 6 when the brain is developing and lead interferes with its development. By the time physical symptoms are evident – headache, nausea, stomach aches, lethargy or hyperactivity and vomiting – significant brain damage has already occurred.

Children pick up lead dust from the floor, from their toys and from pets. They ingest lead when they put their hands in their mouths, when they eat with their hands, when they suck their thumbs, when they ingest soil. Lead compounds used in paint taste sweet, encouraging small children to lick or chew paint chips or chalky paint residue. A single chip of paint of the size of a thumbnail contains 50-200 ug of lead and a few such chips can raise the intake of lead to 1,000 times the acceptable limit.

- Blood lead levels in children of around 10 ug/dl are associated with disturbances in early physical and mental growth and in later intellectual functioning and academic achievement. These persist into adulthood and may be irreversible.
- Progressive elevation of blood lead levels in a child's system can cause a potential genius to drop to an average achievement level and an average child to become learning disabled. Studies have shown as much as a 5.8 decline in IQ (on a scale where 100 is average) for every 10 micrograms increase of lead in blood levels.
- Long-term consumption of low levels of lead can be more dangerous than a single ingestion of concentrated lead.
- The fetuses of pregnant women are gravely affected by

lead exposure since lead can pass through the umbilical cord directly into the baby. When an expectant mother maintains a poor diet, the problem is compounded since she will start breaking down bone to release calcium and other minerals, thereby releasing lead stored in the bones which passes to the developing baby.

- Deficiency of iron, calcium and zinc increase absorption and effects of lead.
- The Centers for Disease Control and Prevention (CDC), USA, has developed various classes of elevated blood lead levels in children. If a child's level is greater than 45 ug/dl, treatment and exposure reduction should start within 48 hours, while levels at or above 70 ug/dl are a medical emergency. Even higher levels cause swelling of the brain or encephalopathy. Children with levels above 120 ug/dl may die unless immediately treated.
- Childhood lead poisoning is typically more severe in developing countries due to inadequately controlled industrial emissions, unregulated cottage industries, and cultural practices such as folk medicines containing lead.
- The World Health Organization estimates that 15-18 million children in developing countries are suffering from permanent brain damage due to lead poisoning. Hundreds of millions of children and pregnant women in practically all the developing countries are exposed to elevated levels of lead.

Purpose and Significance of the Conference

This International Conference on Lead Poisoning is organized and sponsored by The George Foundation, The Centers for Disease Control and Prevention (USA), The World Bank, The Environmental Protection Agency (USA) and the World Health Organisation (WHO). One of the major objectives of the conference is to share information needed to establish a time-phased lead prevention and treatment program for India and other developing countries, and to improve programs in nations that may have already begun. The guest speakers and panel members at the conference are experts in the field from around the world. The invitees to the conference include government officials representing the environment and health departments, members of the scientific community, representatives of international organizations, and industrial leaders with current roles or likely involvement in solving the problem of lead poisoning.

The topics covered in the 3-day conference will help in formulating the national plan and improving existing plans for the prevention and treatment of lead poisoning. The topics fall within the following segments: screening and measurement; prevention; and health effects and treatment. The culminating segment on developing a national plan will integrate ideas gathered from the previous segments.

Additional objectives of the conference are:

- Arriving at an understanding of the worldwide dimensions of the lead problem;
- Developing a framework for integrated solutions to lead poisoning at the international, regional, and local levels;
- Shifting the focus from reactive measures to effective prevention policies;
- Establishing a central clearinghouse for collection and dissemination of information.

The conference is an important step toward international lead poisoning prevention. It will heighten national awareness of lead poisoning in the individual countries and provide the framework for countries to work together to develop and implement permanent solutions. Concerted follow-up efforts will sustain the momentum generated by the conference.

The George Foundation and Project Lead-Free

The George Foundation (TGF), the organizer of the conference, is a charitable not-for-profit trust that pioneered Project Lead-Free to screen nearly 25,000 children and pregnant women, and treat those severely affected by lead poisoning in several major cities in India. TGF initiated a pilot project in Bangalore, India on February 13, 1997 with the participation of six hospitals under the coordination of St. John's Medical College and Hospital. Subsequently, additional hospitals initiated work in Delhi, Calcutta, Mumbai, Chennai and Hyderabad. All these centers completed their screening under Project Lead-Free by the end of September 1998. Findings of Project Lead-Free will be shared at the conference.

The George Foundation was founded in January 1995 by Dr. Abraham George, its benefactor and managing trustee, who initiated Project Lead-Free in India. The foundation is dedicated to the welfare of India's children, especially those who are victims of poverty and/or those who suffer from adverse environmental conditions. Another TGF project currently underway is *Shanti Bhavan,* a free world-class boarding school for poor children in Edipalli, an impoverished area in the Dharmapuri district of Tamil Nadu, India.

For more information about the conference and The George Foundation, write or telephone:

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PROJECT LEAD-FREE

Lead and Anemia screening in India

Overview of the Project : The George Foundation, established in January 1995 in Bangalore, India as a not-for-profit organization under the Indian Trust Act, launched in January 1997 a lead and anemia screening program in India (*Project Lead-Free*). The project was initiated in Bangalore and vicinity, and subsequently expanded to several other major cities across India. Consistent with the Foundation's mission to serve the welfare of children, especially those who are victims of poverty and/or those who suffer from adverse environmental conditions that are beyond their control, *Project Lead-Free* focused on one of the growing problems that has serious consequences for a generation of India's future work force.

A non-profit charity organization, Friends of Lead-Free Children Inc. (headquarters in New York City), which currently has lead treatment projects in several developing countries (including programs in the Dominican Republic; Jakarta, Indonesia; and in Bangkok, Thailand), assisted The George Foundation in launching the program.

Project Lead-Free was conducted via arrangements with six medical centers in the city of Bangalore (St. John's Medical College and Hospital, Baptist Mission Hospital, Lake Side Medical Center & Hospital, Cantonment X'Ray and Laboratory, KempeGowda Institute of Medical Sciences, and M.S. Ramaiah Medical College) which have clinics at each site. One of the clinics operates a mobile unit to access locations throughout the city, such as schools, industrial areas, etc. The George Foundation provided equipment and supplies, support and coordination in the activities of these clinics including giving materials for educating the public on lead poisoning and anemia, and making arrangements for repairs of equipment. The goal of the project was to test up to 25,000 children, pregnant women, and emergency referrals for lead poisoning. The project also emphasized prevention of lead poisoning for the general population.

Project Lead-Free initially focused on the city of Bangalore and subsequently broadened to five other cities: Madras, Bombay, Delhi, Calcutta, and Hyderabad. Screening was dramatically increased after the first year. The clinics that participated from these cities are: In Mumbai: K.J. Somaiya Medical College, The Bandra Holy Family Hospital Society, Guru Nanak Hospital; in Hyderabad: National Institute of Nutrition; in Delhi: Indira Gandhi E.S.I. Hospital; in Calcutta: R.G. Kar Medical College, Medical College Calcutta, Dr. B.C. Roy Memeorial Hospital for Children; in Madras: K.J. Hospital; in Vellore: Christian Medical College.

Objectives:

The main objectives of *Project Lead-Free* are as follows:

1. To target children between one and six years of age, pregnant women, and emergency referrals from doctors and hospitals for testing and treating elevated levels of lead.
2. To educate the community on the major health problems associated with elevated lead levels, the paths of lead exposure in their environment, and ways they can protect their families from lead exposure.
3. To collect hard data on the problem of lead poisoning in India, which was analyzed for developing appropriate responses. The Foundation will present the results of Project Lead-Free at the International Conference to be held after the screening.

The project is expected to have a much wider impact than what the numbers for testing will suggest; in addition to those who directly benefit from the program, there are many more - relatives, friends and acquaintances of the participants - who will be made aware of the problems of lead pollution and anemia and how these problems can be prevented or treated. The ripple effect of such flow of information together with the education/prevention efforts of the project personnel can change for the better the health of possibly millions! Furthermore, the project should serve as an inspiration for others to launch other public health projects, which in turn could subsequently lead to the enactment of meaningful environmental laws. The data collected during the course of the project will aid in the research endeavors of the medical community. Most importantly, the project will save a whole generation of children whose physical and mental development will otherwise be impaired. This has implications for the country's future development.

Implementation of the Project :

The project was initiated in Bangalore and vicinity, and extended to additional cities by the second year. The project comprises of three components: testing, treatment and prevention/ education.

1. Testing: The New York City Department of Health provided Hematofluorometers (machines for detecting lead, mercury, and other harmful metals in the blood, and also iron deficiency) to Friends of Lead Free Children Inc. They give instant test results on zinc levels at a low cost per test, and require only one drop of blood on a cover glass to get a reading, and can be managed by a lab technician.

Friends of Lead Free Children Inc. provided fifteen Hematofluorometers during the initial year for screening purposes, which were converted for use in India. Those with elevated readings were further tested with lead analyzers purchased from ESA, Inc. Both organizations are also providing, at a reduced charge, the support supplies for the machines. The machines are calibrated with specially prepared blood controls that are verified by the New York State Lead Laboratories. The controls are not spiked with lead, but are real blood containing high, medium, and low levels of lead for verification. The lancets are the pure stainless steel variety and

not the cheaper aluminum lancets. The cover glass is a specifically prepared glass that has been double washed to make sure that no residues are left behind which could affect the readings. In short, the machines and supplies are designed for optimal performance, and are approved by the New York City Lead Program.

The George Foundation provides training in the use of the machines and interpreting the results. A detailed training manual covering aspects of lead poisoning and iron deficiency anemia and all aspects of proper testing procedures is also provided. Supplies for testing include cover glass, disposable gloves, lancets, blood collectors, gauze and bandages, and blood controls.

2.Treatment For treating iron deficiency anemia, The George Foundation program provided the clinics special iron pills. These pills contain ferrous succinate, (the best absorbed form of iron as according to recent studies) that can quickly correct the anemia. Many health programs use an inexpensive variety of iron pills containing ferrous fumarate that is not easily and expeditiously absorbed by the body. The ferrous succinate pills that The George Foundation provided contain 75 mg of iron plus Vitamin C, which increases the absorption by up to 400%.

For treating lead poisoning, The George Foundation program provided the clinics doses of the oral chelator meso 2,3-dimercaptosuccinic acid (DMSA); however, this could not be used pending approval by the Drug Control Agency in India. This chelator has been used all over the world for many years, and in the U.S. under the name Succimer. The patients simply take the pills twice daily for 19 days. There is no need for clinical visits during the 19 days. The chelator only removes heavy metals such as lead and mercury from the body, leaving behind the essential minerals like calcium, iron, and magnesium. The more traditional method of treatment practiced in most lead programs is to use a very painful chelator drip agent EDTA to chelate the lead from the body. This is expensive because it requires 5 days of hospital treatment consisting of four hours of drips per day. This treatment also results in the removal of essential minerals from the body, such as calcium and magnesium.

While test readings above 10 mcg/dL indicate elevated levels of lead, treatment with oral chelator will be limited to only those above 40 mcg/dL. This is so because this type of medical intervention is suggested only when toxicity reaches dangerous levels. Emphasis will always be on prevention/ containment.

3.Prevention/education : The program seeks to raise public awareness of the problems of lead poisoning and iron deficiency anemia and to offer information on how to protect one's family from lead exposure. The campaign to raise public awareness will involve the use of media (talk shows on radio and television), leaflets, placing advertisements in newspapers, offering lectures at schools and at community meetings, and distributing educational materials (pamphlets and brochures) at the sites. The materials offer healthful tips on what to do to lower or even eliminate exposure to lead in a child's environment. The main target for education are parents. They have more control over the actions and habits of their children than anyone else does. All doctors and hospitals in cities would be notified of the availability of the lead testing machines and treatment.

The prevention efforts included making available to the public hard data on the subject of lead poisoning and anemia, not only on a global scale but also with respect to the local communities, as such data becomes available from the Foundation's screening and treatment program. Information gathered was consistent with the suggested questionnaire provided by the Center for Disease Control (CDC), as adapted for the local environment. Data collection was part of the Foundation's screening, treatment and education program. The data is likely to particularly benefit the research endeavors of the medical community.

Conclusion:

A nation's most valuable asset is its children. They are the future workforce and our hope for a better tomorrow. In order to realize their full potential, children need to grow up in an environment that is safe and supportive. Unfortunately, science has proven conclusively that large populations exposed to high levels of lead and/or suffering from chronic anemia can never hope to achieve their full potential. Many will not finish school and those who do are likely to be delayed in all areas of learning. They will live as underachievers in a life of constant struggle.

Lead poisoning is silent and insidious, accumulating in one's body with its full negative impact not realized until much later in life. We need to invest in our children now, before it is too late, and The George Foundation's lead and anemia project will do just that—clear the way for the normal physical and mental development of children. We have a moral obligation to inform the public of the potential health hazards of lead and anemia and to educate them on what they can do themselves to lessen their families' exposure to lead. Project Lead-Free is likely to inspire others to launch other public health projects, which in turn will lead to the enactment and enforcement of meaningful environmental laws.

Admiral O. S. Dawson who was responsible for organizing the screening effort and gaining awareness among government officials and the general public, chaired Project Lead-Free. Dr. T. Venkatesh of St. Johns Medical College and Hospital was responsible for overseeing the laboratory work for screening and analysis. The project was conceived and developed by The George Foundation with the technical and organizational assistance of Mr. Steve Null from Friends of Lead-Free, Inc., and co-ordinated with the help of Dr. Lekha Keister. Bharat Electronics and Air India provided assistance in repairs and transportation, respectively. The Foundation is grateful to all clinics and others that voluntarily participated in the project.

A BRIEF DESCRIPTION ABOUT THE GEORGE FOUNDATION

The George Foundation was established in January 1995 in Bangalore, India as a not-for-profit organization under the Indian Trust Act. The Foundation is dedicated to the welfare of children, especially those who are victims of poverty and/or those who suffer from adverse environmental conditions that are beyond their control. Consistent with this mission, the Foundation has initially embarked on two major projects:

1. **Project *Shanti Bhavan:*** facility to house and educate at a time 150 children of deprived backgrounds from pre-school to grade 11. It is a world-class institution committed to excellence and globally shared values.
2. **Project *Lead-free:*** clinics to test and treat upto 25,000 children, pregnant women, and emergency referrals for lead and for iron deficiency anemia. This project also emphasizes prevention of lead poisoning for the general population.

In addition to these two projects, the Foundation has initiated work on establishing a community center for Early Detection and Prevention of diseases in rural areas where such care is not readily available in most instances. Consistent with this, a computer software program (EDPS 2000) has been developed for use at remote clinics, which is presently undergoing testing.

The George Foundation is governed by the following *Board of Trustees:*

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PROJECT LEAD-FREE PARTICIPATING CLINICS

BANGALORE

1. St. John's Medical College & Hospital
   Director of Project : Dr. T. Venkatesh
2. Bangalore Baptist Hospital
   Director of Project : Dr. Victor John
3. Kempegowda Institute of Medical Sciences
   Director of Project : Dr. M.K.Sudarshan
4. Lakeside Medical Centre & Hospital
   Director of Project : Dr. H Parmesh
5. Cantonment X-Ray & Laboratory

Director of Project : Dr. A.F.A Mascarenhas

6. M. S. Ramaiah Medical College
   Director of Project : Dr. C.V.Anand

MUMBAI

7. K. J. Somaiya Medical College
   Director of Project : Dr.P.S.Shankar
8. The Bandra Holy Family Hospital Society
   Director of Project : Dr. Jude Vaz
9. Guru Nanak Hospital
   Director of Project : Brig. S.K. Chaddha

HYDERABAD

10. National Institute of Nutrition
    Director of Project : Dr. Jagdish

DELHI

11. Indira Gandhi E.S.I.Hospital
    Director of Project : Dr. R.K.Chandoke

CALCUTTA

12. R.G. Kar Medical College
    Director of Project : Prof. Jayasri Mitra
13. Medical College Calcutta
    Director of Project : Prof. Sandip Roy
14. Dr. B.C.Roy Memorial Hospital for Children
    Director of Project : Prof. Madhurima Lahiri

MADRAS

15. Ramachandra Medical College
    Director of Project : Dr. (Mrs.) Sheila Rajarathnam

VELLORE

16. Christian Medical College & Hospital
    Director of Project : Dr. Jayaprakash M.

www.leadpoison.net

Consistent with one of the goals of the conference to establish a central clearinghouse for the collection and dissemination of lead poisoning related information, The George Foundation has set up a web site www.leadpoison.net. This site will collect and update all relevant information from around the world pertaining to:

1. Scientific studies and research papers on impact, prevention, and treatment
2. Policy initiatives by both government and private institutions
3. Legislative action by governments
4. Lead poisoning prevention and treatment programs
5. Ideas, suggestions, news, etc.

Conference participants will be requested to provide their recommendations on how the above information should be categorised for easy search and access. A suggested breakdown of topics and sub-topics as a "table of contents" for the web site will be circulated for your comments. Based on your input, the web site will be organised by subject categories. Anyone wishing to put up information in this web site must choose one or more subject categories (preferably no more than two subject categories to avoid repetition of information) before transmitting the information.

Any information transmitted to the web site must have
(a) a summary of no more than 5 sentences, and
(b) entire text.
Users will be able to review the summary/abstract before accessing the entire text.

The site will be operational by March 31, 1999 at which time the proceedings of the conference will also be available.
Please forward your comments and suggestions to: georgef@giasbg01.vsnl.net.in

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SHANTI BHAVAN

(A project of The George Foundation)

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Shanti Bhavan, literally translated from the Hindi Language, means 'Haven of peace". Established in September 1997, the organization is a 60,000 sq.ft. complex situated on 30+ acres, offering pastoral setting for the children. The school is located in Edipalli, an impoverished area in the Dharmapuri district of Tamil Nadu and Karnataka.

Shanti Bhavan is non-sectarian. It has no affiliation with any religious or political group. It seeks to instill in children universally accepted values of honesty, integrity and transparency that are crucial for success in life.

Repect for all cultures and religions is practiced. The main goal is to provide tender loving care, medical attention, psychological support and outstanding education to a select number of children free of cost, so that they become highly successful in life.

Shanti Bhavan is a project of The George Foundation, a non-profit organization founded in January 1995. TGF is dedicated to the welfare of children, especially those who are victims of poverty and those who suffer from adverse environmental conditions.

For further details contact :

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