

# Blacksmith Institute

Annual Report  
2006



# Blacksmith Institute

## Our History

Blacksmith Institute's vision is a clean planet for our children. We develop and implement solutions for pollution-related problems in the developing world. We work cooperatively with partnerships of donors, governments, NGO's and others, and provide strategic, technical, and financial support to local champions as they strive to solve specific, pollution-related problems in their communities.

Since 1999, the Blacksmith Institute has been addressing a critical global need: the clean-up of dangerous and largely unknown polluted sites throughout the developing world. Industrial wastes, air emissions, and legacy pollution from old industry affect millions of people around the world. Women and children are especially at risk. Tens of thousands of people are poisoned and killed each year. Others have reduced neurological development, damaged immune systems, and long-term health problems. The World Health Organization, in conjunction with the World Bank, estimates that 20 percent of deaths in the developing world are directly attributed to environmental factors from pollution. This threatens efforts to create sustainable economies, protect local environments, and improve the health and development prospects of people living in poverty.

## Our Strategy

Blacksmith's priority is to work in locations throughout the developing world where human health is most affected by pollution. Our programs involve a multi-step process of:

- Identifying polluted places in the developing world, with nominations received from members of the international community and through the internet;
- Assessing the health risks at those locations by reviewing nominations with a Technical Advisory Board of leading international specialists on a rolling monthly basis and visiting candidate sites with likely high health risk implications;
- Conducting an Initial Site Assessment, a triage protocol that validates likely health implications, and enables the design of an intervention, and
- Designing and implementing a remediation strategy tailored to the specifics of the site in question, using local people to implement the project in a cooperative fashion.

## Our Focus

Our work encourages the international community to recognize local point-source pollution as a pressing issue of grave concern.

Through our continuing support of local initiatives, Blacksmith empowers active responses to pollution within communities. This approach capitalizes on local knowledge and networks and is inclusive of all site stakeholders from community leaders and local governments, to industry, national and international actors .

Blacksmith Institute's name is inspired by the hard work of a blacksmith who, in a dirty environment, creates items that are practical, useful, and can stand the test of time. Blacksmith Institute strives to emulate this with its projects - creating and supporting local agencies that truly work to solve pollution problems.

Blacksmith Institute  
2014 Fifth Avenue  
New York , New York 10035  
Telephone: 646 742-0200  
Fax: 212 779-8044

[www.blacksmithinstitute.org](http://www.blacksmithinstitute.org)

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# Blacksmith Institute

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Johns Hopkins School of Public Health

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Administrative Dean and Founder  
Environmental Science Program  
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Litigation support practice leader for  
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Inc

## Staff

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**David Hanrahan, M.Sc.**

Director of Global Operations

**Meredith Block, MPA**

Programs Administrator and  
Africa Projects Coordinator

**Bharati Maskey, MS**

Polluted Places Coordinator

**Maya Shenkmen**

Russia Projects Coordinator

**Marlo Mendoza**

Philippines Projects Coordinator

**Peter Hosking**

Asia Projects Coordinator

**Promila Sharma**

India Projects Coordinator

**Vladimir Kuznetsov**

Russia Projects Coordinator

# World's Worst Polluted Places 2006

## Blacksmith Institute Launches First-Ever Polluted Places List

In 2006 Blacksmith Institute produced the first list ever released of the World's Worst Polluted Places. This is a current record of the top 10 toxic locations where pollution severely impacts human health, particularly the health of children. Environmental and health experts – including faculty from Johns Hopkins, MIT, Harvard, Mt. Sinai Medical Center, and City University of New York, among others – who serve on Blacksmith Institute's Technical Advisory Board developed the criteria and evaluated candidate sites.

**The Goal:** To give voice and urgency to the “Brown Agenda” (i.e., the issue of long-term pollution), which competes with the Green Agenda (conservation, biodiversity) and Global Warming for attention among journalists and policy-makers concerned with the environment.

**Nominations:** Blacksmith staff members identified and researched 35 sites culled from more than 300 that had been presented to Blacksmith over the past seven years for support in clean up by local communities, non-government organizations (NGOs) and a broad range of environmental authorities around the world.

**Evaluation:** Using a scoring system it developed for this purpose, the Blacksmith TAB weighed pollution conditions in terms of their impact on human health, the size of the affected population, and specifically the risk to children's development.

## Action/Reaction:

- According to Dominican news outlet, Diario Libre, the environmental secretariat announced the closing of Metaloxa, the company responsible for polluting the Haina site.
- According to Peru's CPN, local officials publicly called for hastening the clean up and health activities in La Oroya.
- In Russia, a local NGO leader confirms deplorable conditions and calls for remediation.

## Top 10 Polluted Sites - 2006

**Linfen, China**  
**Dzerzhinsk, Russia**  
**Ranipet, India**  
**Haina, Dominican Republic**  
**Kabwe, Zambia**  
**Rudnaya Pristan, Russia**  
**Norilsk, Russia**  
**Mailuu-Suu, Kyrgyzstan**  
**La Oroya, Peru**  
**Chernobyl, Ukraine**

**Awareness:** Within 24 hours of the press release, a global media campaign delivers the news to millions through online, print and broadcast media channels in 10 languages. The top international news services - Reuters, AP, Bloomberg, and AFP – carried the story, which was picked up by over 300 media outlets in the U.S. and abroad. Notable among the results:

- Most e-mailed story on the BBC Web site.
- Featured on Yahoo News Homepage.
- Radio interviews with Blacksmith director Richard Fuller in Miami, Columbia, Portugal, Australia, and the BBC
- Print stories in Australia, U.S., Italy, France, Peru, Russia
- Visits to Blacksmith Web site increase 400 fold
- Within a week, Blacksmith receives over two dozen new nominations for 2007 list and supportive feedback and thanks from around the globe.



# Project Highlights: AFRICA

## Blacksmith Country Representatives

### Delax Chilumbu

Zambia  
Advocacy for Restoration of the Environment

### Saada Juma

Tanzania  
AGENDA for Environment and Responsible Development

### Mamadi Kourouma

Guinea  
Centre d'Appui au Developpement (CAD)

### Dr. Marcelino Lucas

Mozambique  
Director, Environmental Health Department, Ministry of Health

### Ibrahima Sow

Senegal  
Chemical Engineer, Division of Pollution Control, Ministry of Environment

### Amadou Diouf

Senegal  
Director, Africa Clean

## Senegal: Hann Bay Industrial Zone

Although Hann Bay wraps around the industrial zone of Dakar, Senegal, it is a densely populated area. Residents of the informal settlements along the coastline use the bay for bathing, washing and cooking. Numerous fishing boats can be spotted along the crowded shore. Once known as a recreation destination for local families, industrial pollution along the banks from 1968-1997 has rendered it exceedingly toxic.

The Bay is polluted not only by sewage from the city but also by dangerous untreated industrial waste from the 85 factories feeding the Bay that have little or no effluent treatment facilities. Studies have revealed effluent contamination with highly toxic heavy metals like mercury and lead. Contaminated bay fish are caught by local fishermen and widely consumed throughout the capital.

Blacksmith has established an Advisory Board that has led to the formation of a larger stakeholder group consisting of staff from the Ministries of Environment and Industry. The group is reviewing existing appropriate studies and is currently developing a remediation plan. This project is based on the utilization of a centralized effluent treatment facility for the factories of the Hann Bay region. User fees will pay for the facility construction costs, as well as to remediate the legacy contamination from historical toxins.



## Zambia: Lead Mine and Smelter Pollution

One of the world's worst polluted cities, Kabwe, Zambia is located about 130km north of the nation's capital, Lusaka. Since 1902, lead mining and smelting operations were running almost continuously with no emissions controls up until 1994. The mine and smelter have shut down, leaving the city of nearly 300,000 people with a legacy of poison and toxicity from deadly concentrations of lead in the soil and water.

Blacksmith helped found the Kabwe Environmental and Rehabilitation Foundation (KERF), a local NGO, to inform the community about the dangers of lead and how to limit exposure, as well as provide nursing support for the ill. As a result of Blacksmith's ongoing involvement, the World Bank has allocated \$15 million to Kabwe clean-up, as part of a larger \$40 million grant and loan to clean up the industrial Copperbelt Region of Zambia. With Blacksmith support, KERF was approved for a World Bank grant of approximately \$100,000 to establish community information centers. KERF has built the first of many planned community health and education centers to combat lead poisoning. This project also seeks to increase the capacity of national academic and professional expertise in treating and ending lead poisoning.

The Kabwe project exemplifies Blacksmith's ability to leverage funds and act as a powerful intermediary between communities and large donor organizations.

## Guinea: PCB Contamination

Over the past 50 years, the EDG Site de Tombo, an electric power plant, has dumped as much as 1,000 gallons of PCB-contaminated transformer oil into Conakry Bay. The plant, located less than 60 meters from the bay's edge, is within 100 yards of a village that relies on the water for drinking, cooking, and bathing. Particularly for workers at the power plant, exposure to PCBs is direct and immediate. Workers drink the site's water and wear no protective gear while in direct contact with PCBs. Children near the power plant are the most vulnerable to PCB poisoning, as their systems are more delicate than those of adults and more easily damaged by even small amounts of PCB chemicals.

Blacksmith Institute is supporting a project that has implemented temporary storage for future PCB drainage while preparing to remediate the legacy pollution. Blacksmith is seeking funding to build a waste treatment facility for the contaminated soil as well as to educate workers on pollution avoidance measures. In addition, project staff will train Ministry of Environment staff to oversee future enforcement of pollution regulations, including monitoring and creating toxic baselines for PCB management nationwide.



# Project Highlights: ASIA

## Industrial Pollution: Philippines

The Marilao, Obando and Meycauayan River system in the Philippines hosts a multitude of industrial activities along its shores, including: lead recycling facilities, gold refineries, tanneries, open dumpsites, and electroplating. These industries do not have waste treatment facilities and the effluents pollute the surface water system, directly affecting 250,000 people and a thriving aquaculture economy .

Since 2005, Blacksmith Institute has supported a local stakeholder group comprised of community leaders, local government, scientists and industry representatives who have worked to stop ongoing pollution and treat legacy wastes. Two of their great successes are: a tannery waste treatment plant paid for by the Manila Tanneries Association; and a commitment to strictly regulated treatment of lead battery waste stockpiles by the largest lead smelter in the country, Philippine Recyclers Incorporated (PRI), who is a member of the stakeholder group. Additionally, the stakeholder group is working towards formal recognition by the Department of Environment and Natural Resources, designating protection of the river system as one of the first water quality management areas in the Philippines under the newly passed Clean Water Act.



## Hazardous Waste: Muthia Village, India

In Muthia, Gujarat, approximately 60,000 tons of toxic sludge from tannery and dye plants as well as other untreated waste has been dumped in the village over the last decade. These hazardous wastes have leached into the groundwater, which has turned yellow. Monsoon rains wash and spread the contaminated sludge over wide areas, impacting the soil as well as all surface water sources. High levels of heavy metals have been found throughout the area, including peoples homes, schools and children's play areas.

In partnership with local authorities and NGOs, Blacksmith funded the implementation of a multiphase clean-up. To prevent further groundwater contamination, the unlined dumps were cleared and the waste was taken to a regulated landfill site while the remaining area was decontaminated. Employing the use of vermiculture, in which worms that concentrate heavy metals in their bodies are used to clean soil, a hazardous waste remediation training program was established for the villagers and local farmers. The project has been successful thus far, and the site continues to be monitored by local groups..

## Artisanal Gold Mining: Cambodia

Artisanal gold mining results in about one third of atmospheric mercury pollution making it a global concern. In Ratanikirri province, Cambodia, small scale miners employ mercury amalgamation to extract gold from the ore. The amalgam is heated uncovered to volatilize mercury and recover the gold, resulting in the release of mercury into the surrounding environment. This process has caused elevated mercury levels in gold miners and residents of downstream villages.

In collaboration with Environment Canada and the Global Mercury Project, a series of appropriate technology trainings were held to reduce mercury emissions and exposure among miners and their families. Trainings in the use and construction of a simple, inexpensive piece of equipment known as a retort were given at the mine site, and demonstrations were also given to the local Ministry of Environment and craftsmen in Banlung. Presentations were made in Phnom Penh to the Ministry of Environment, Ministry of Fisheries, Plan International, and Rotary Club.

Blacksmith also measured severe bacterial contamination in the community drinking water well and provided a ceramic water filter that removes harmful bacteria.



## Blacksmith Country Representatives

### Marlo Mendoza

Philippines  
Coordinator

### Liu Zhoade

China  
Oriental Environmental  
Institute

### Promila Sharma

India  
Polluted Places  
Coordinator

### Pak Sokharavuth

Cambodia  
Ministry of Environment

### Leyan Wang

China

# Project Highlights: Eastern Europe

## Blacksmith Country Representatives

**Vladimir Kuznetsov**

Russia  
Polluted Places Coordinator

**Alexey Yablokov**

Russia  
Director, Center for  
Russian Environmental  
Policy in Moscow

**Petr Sharov**

Russia  
Far Eastern Health Fund

## Radioactive Milk: Bryansk, Russia

After the failure at Chernobyl, significant areas in Russia and Ukraine became polluted with the radio-nuclide Cesium-137. In Bryansk, Russia tens of thousands of residents were unknowingly consuming meat and dairy products tainted with excessive levels of radioactive materials. As the main consumers of dairy products, children in Bryansk were exposed to excessive amounts of radiation. Doctors in Bryansk have recorded higher than average oncological diseases as well as decreased immune system capacity in the local children.

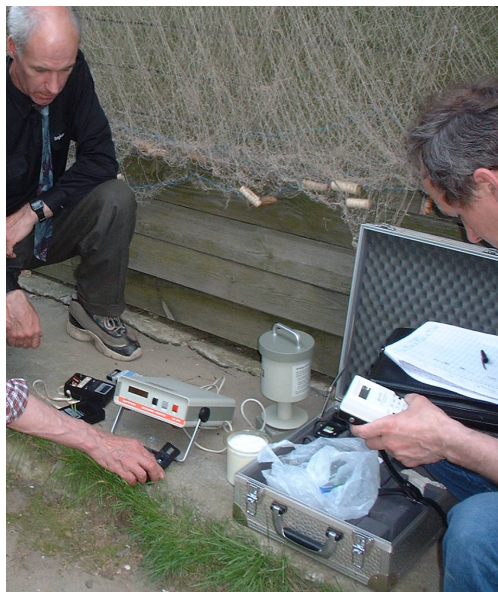
Blacksmith Institute funded the Veterinary Laboratory of Bryansk region, an organization with experience in monitoring cesium in milk and meat, to distribute neutralizing preparations to dairy cows. The Veterinary Laboratory monitored the manufacturing and delivery of veterinary preparations as well as the training of the population in administering the preparations.



## Sakhalin Island

Northern Sakhalin has several onshore oil and gas fields, developed by the Russian company Rosneft-Sakhalin-morneftegaz, that have been operating with no controls since the 1920's. Oil leaks and spills are common due to the obsolete equipment, primitive drilling technologies and corroded oil pipelines. Two of the oldest rigs still operate as they did approximately 75 years ago. These onshore Soviet-era oil companies cause massive pollution and environmental damage.

Blacksmith Institute has funded a program that surveyed the area and analyzed the extent of the damage caused by mineral oils and the suspended solids. Currently, a report is being prepared that will detail a remediation plan for the company to pursue.



## Chemical Weapons Waste: Dzerzhinsk, Russia

In Dzerzhinsk, an epicenter of Russian chemical manufacturing, the average life expectancy is 42 years. Until the end of the Cold War, the city was among Russia's principal production sites of chemical weapons. According to figures from Dzerzhinsk's environmental agency, between 1930 and 1998, almost 300,000 tons of chemical waste, composed of 190 different toxic compounds were improperly disposed of, into the water table. These chemicals have turned the water into a white sludge containing dioxins and high levels of phenol - an industrial chemical which can lead to acute poisoning and death. Levels of phenol are reportedly 17 million times the safe limit. The city draws its drinking water from the same aquifers into which these old wastes and unused products were pumped. Now that many of these industries are no longer in operation, the local groundwater has risen, along with the water level in the canal. This rise in the canal's water level threatens to dump arsenic, mercury, lead and dioxins into the Oka river basin, a source of drinking water for the nearby city of Nizhny Novgorod.

Following the support of a baseline research project in the area in 2004, Blacksmith, in cooperation with the local government, has funded the installation of water treatment systems in settlements throughout Dzerzhinsk where groundwater is highly polluted, yet remains the sole source of drinking water. In addition, Blacksmith has funded the establishment of a steering committee led by a local NGO (DRONT) in cooperation with the Nizhny Novgorod municipal government, to begin the design of a large-scale remediation and pollution mitigation plan for the entire affected area.

# Current Project List

## CAMBODIA

### Pesticide Contamination

Ministry of the Environment,  
Department of Pollution Control

### Gold Mining and Mercury Emissions

Ministry of the Environment,  
Department of Pollution Control

## CHINA

### Greener Beijing

Greener Beijing Institute

### Fubao Village

Yunnan Environmental Protection Bureau

## DOMINICAN REPUBLIC

### Haina Lead Battery Contamination

## GUINEA

### Gold Mining and Mercury Emissions

Centre D'Appui au Developpement, UNIDO

### PCB Clean-up and Removal

Centre D'Appui au Developpement

## INDIA

### Groundwater Contamination, Kanpur

Central Pollution Control Board and Eco-Friends

### Groundwater Contamination, Meerut

Janhit Foundation

### Kolkata Lead Smelter Residue Assessment

### Aruputo Chromium Contamination Assessment

### Tangra Tannery Chromium Contamination

### Roro Hills Asbestos Dump

### Hyderabad Lake Pollution

### Muthia Village Hazardous Waste

Concept Biotech

### Panki Katra Fly-Ash

Center for Environment Education

### Bicchadi Industrial Estate

### Gujurat Stakeholders Group

Society for Environmentla Protection

## MOZAMBIQUE

### Pilot Project for the Reduction of

### Mercury Contamination

Ministry for the Coordination of Environmental Affairs

## NEPAL

### Dhobi Khola River Pollution

WATO

## PHILIPPINES

### Marilao/Meycauayan Industrial Contamination

Ministry of Environment

## RUSSIA

### Rudnaya Pristan Lead Remediation

Far Eastern Health Fund

### Sakhalin Oil Remediation

Sakhalin Environment Watch

### Nizhny Novgorod Toxic Chemical Remediation

Volga Center for Environmental Health

### Drinking Water Treatment, Dzerzhinsk

DRONT

### Bryansk Radionuclide Treatment

Eksorb

### Krasnoufimsk Monazite Remediation

SOKOL

### Muslyumova Radioactive Sludge Removal

TECHA

## SENEGAL

### Pilot Project for the Control of Air Pollution in Dakar

Africa Clean, Ministry of Environment

### Baia de Hanne Industrial Pollution

Africa Clean, Ministry of Environment

### Leaded Gasoline Vendor Testing

Africa Clean

### Gold Mining and Mercury Emissions

Ministry of the Environment,  
Department of Pollution Control

## TANZANIA

### Lake Victoria Pollution, Mwanza

LEAT (Lawyers' Environmental Action Team)

### Environmental Management Trust

### Msimbazi River Action Network

## THAILAND

### EnLAW (Environmental Law for the Wants)

## ZAMBIA

### Kabwe Clean-up Oversight

ARE (Advocacy for Restoration of the Environment)

### Kafue River Cleanup

ARE (Advocacy for Restoration of the Environment)



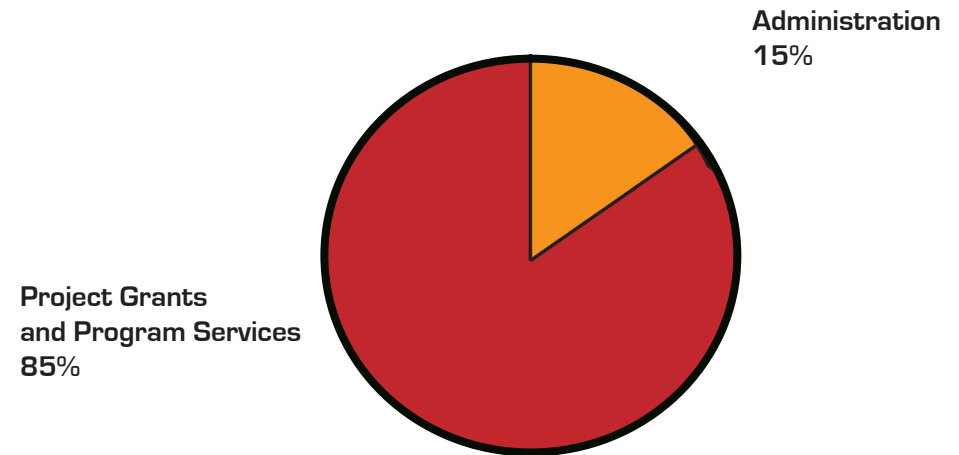
# 2006 Financial Highlights

In 2006, Blacksmith Institute's total revenue was approximately \$870,000. This total was a result of focused fund raising efforts and strategic development planning. Blacksmith's 2006 expenses totaled \$780,000. Of that figure, 85 percent or \$663,000 directly supported our programs.

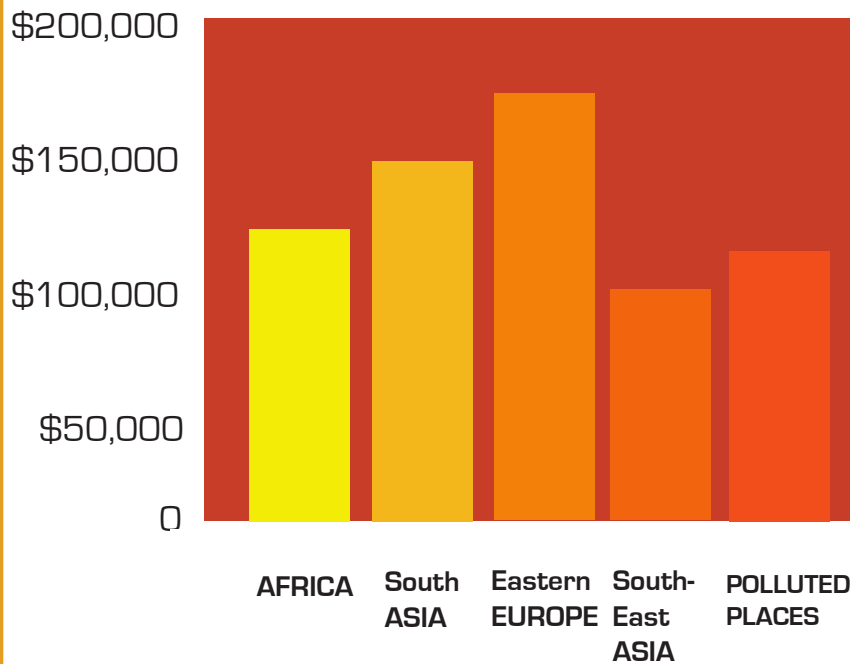
This past year, Blacksmith Institute supported 35 ongoing projects in 13 countries, completing 7 in 2006 and renewing 24 for 2007. Blacksmith Institute continues to approve new projects: 362 sites have been nominated to our Polluted Places online database. We are constantly expanding geographically and are tackling a diverse range of environmental and human health issues.

Private institutions and foundations continue to be the major funding sources for Blacksmith, though individual donations provide substantial support for our programs.

## 2006 Expenses



## Expenses by Region



Developing and implementing solutions for the innumerable pollution-related problems in the developing world is the focus of our work.

We develop partnerships with donors and transnational organizations to provide strategic, technical, and financial support to local champions as they strive to solve specific, pollution-related problems in their communities.

These results are in the process of being audited. Please contact our office for all audited statements.

# 2006 Donors

Blacksmith Institute would like to thank the following individuals and organizations for their generous support:

Asian Development Bank  
Communities and Small-Scale Mining  
Dudley T. Dougherty Foundation  
ERM Foundation  
Mailman Foundation, Inc.  
Ohrstrom Foundation  
Richard and Rebecca Evans Foundation  
Sigrid Rausing Trust  
Vincent Mulford Foundation  
USEPA  
Whole Systems Foundation  
William T. Hillman Foundation  
World Bank  
Roy J. Zuckerberg Family Foundation

Richard Fuller  
Joshua Ginsberg  
Sheldon Kasowitz  
Joshua Mailman  
Ron Reede  
Paul Roux

ABM Company of New York  
Classic Recycling  
Great Forest Inc.  
The Hobbs Group  
Men At Work Construction Corp

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Lisa Failla  
Barbara Fischer  
Anne Gehris  
Richard T. Gibbens  
Sara Kate Gillingham-Ryan  
Joann Hanson  
Mr. and Mrs. Stephen Laico  
Valerie Lester  
Michelle Lindsay  
Marc Kenneth  
Mary Knowles  
Marian O. Naumburg  
Murray and Lisa Palmer  
Nancy Sammon  
Lisa Schlingerman  
C.R. Sonne  
Charlotte Treifus  
Lloyd Zuckerberg

Blacksmith Institute  
2014 Fifth Avenue  
New York , New York 10035  
Telephone: 646 742-0200  
Fax: 212 779-8044

[www.blacksmithinstitute.org](http://www.blacksmithinstitute.org)

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In addition, we wish to thank the numerous companies and individuals whose unfailing generosity gives Blacksmith the opportunity to continue its vital work around the globe. Your crucial gifts help us consistently expand and save lives daily.