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## **Curriculum Vitae**

**Date of Birth: 26 July 1950**

**Nationality: United States**

**Country of Permanent Residence: United States**

### **Employment Record:**

45+ years experience in environment and safety leadership in industry, government and NGO sectors. Extensive environmental project management and technical direction, especially for contaminated site assessment and and risk reduction actions.

### **Blacksmith Institute (now Pure Earth), 2010-2020**

- Lead Technical Adviser – 2012 to present
  - Provided technical direction for lead, chemical and pesticide remediation projects in Bangladesh, India, Indonesia, Vietnam, Ukraine, Somaliland and Zambia (see project list below.)
  - Investigated lead, chromium, pesticide and mercury (artisanal gold mining) sites to determine levels of contamination, public health risks and possible remediation strategies in many countries including (in alphabetic order) Bangladesh, Colombia, El Salvador, India, Indonesia, Kyrgyzstan, Mexico, Philippines, Somaliland, Vietnam and Zambia
  - Conducted training for investigators of toxic contamination under Pure Earth's Toxic Site Identification Program (TSIP) and other efforts. Training was done in India, Bangladesh, Columbia, Vietnam, and for various countries in the former Soviet Union. Consulted on the development and improvement of TSIP investigation and training methods.
  - Advised and participated on detailed household sampling and apportionment studies to determine the levels and causes of lead exposure to children in India and Georgia.
  - Technical Director for a project to assess and prioritize investigation of pesticide contamination sites in the former Soviet Union countries, working for the UN Food and Agriculture Organization. Included development of a rapid assessment tool to allow low cost determination of contamination risks by trained by non-expert field personnel.
- Director of Operations – 2011-2012 (until stepping back to part-time technical leadership role)
  - Development and implementation of plans, policies, priorities and systems to accomplish the organization mission and expand operations to effectively utilize increased funding.
  - Operational staff direction for 7 colleagues in New York and a network of 20 colleagues and consultants around the globe.
  - Management oversight of remediation projects – scope and strategy development; government and partner collaboration; execution planning, including budget, schedule and resources.
  - Improvement of Blacksmith's system to conduct low-cost rapid environmental assessments and risk ranking of contaminated sites in low and moderate income countries using trained but non-expert investigators – now called the Toxic Site Identification Program (TSIP) - funded by the EU and World Bank. Led efforts to improve quality of investigations and training of investigators.
  - Technical direction of specific toxic contamination remediation projects – assessment of sites, selection of remediation methods, technical scope of work development, meeting and collaboration with stakeholders and governments, selection of local partners.
- Project Field Manager for Lead Remediation Project, Zamfara, Nigeria, 2010
  - Directed field operations for 3 months for a >\$2MM project to remediate severe lead contamination in 5 remote villages related to artisanal gold mining in lead ores, which had caused the death of >600 children. Constructed 7 landfills for the lead soil disposal, meeting international standards. Directed an international staff of 12 and a local staff of >240 managers and workers. Managed budget, schedule, payroll, procurement, and government relationships, all under difficult

conditions (very limited power, no phones or cell phones, crude living conditions, inexperienced staff, government corruption, no financial system in place, high crime risk and more.)

### **Sabbatical – 2008 to mid-2010**

- Extensive global and US travel, including studying environmental and social conditions in 10 mostly low-income countries
- Bicycled across America and took many other backpacking and multi-day bicycle trips

### **Pfizer Inc., New York, 1992-2007**

Led the environment, health and safety (EHS) program for Pfizer Global Manufacturing (PGM), which included 98 manufacturing plants and 12 logistics centers in 30 countries, with over 30,000 employees.

- Vice President of EHS, Pfizer Global Manufacturing, 2000 – 2007 (when early retirement taken)
- Senior Director of EHS, Pfizer Global Manufacturing, 1997 – 1999
- Manager of Environmental Planning, US Pharmaceutical Manufacturing, 1992 – 1996
  - Developed organization EHS objectives and reporting systems and assured that factory EHS objectives were in line with goals. The focus on objectives and accountability coupled with information sharing and practical technical support led to continuous improvement related to injury rates, occupational health risk reduction, spills, emissions and compliance.
  - Established a program to review the EHS performance of key suppliers and contract manufacturers, and to consider EHS in supplier and contract manufacturer selection.
  - Co-led development of a program to systematically assess occupational health risks related to potent pharmaceutical compound exposure in the workplace. Led measures to reduce these risks through capital improvements, improved personal protective measures (where capital improvements were not feasible) and training of workers and managers about the risks.
  - Directed contamination investigations and remediation measures at 8 major plants, and provided management and technical oversight for remediation efforts at many other sites. Personally led assessments to uncover contamination at several sites, notably in Argentina, India and Mexico.
  - Established and supervised the PGM EHS staff with up to 17 colleagues, plus cross-factory regional EHS Teams. Mentored many colleagues, often enabling their promotion.
  - Developed plans to address serious air emission compliance concerns at several key factories and led implementation, greatly resulting reducing VOC and NOx emissions.
  - Member of a technical team that evaluated new product manufacturing processes. Helped develop tools to measure EHS impact of active pharmaceutical ingredient synthesis processes and implement a green chemistry program. Input regarding EHS concerns lead to many chemical synthesis process improvements.

### **Water/Sanitation Engineer, UNICEF & World Health Organization, Banda Aceh, Indonesia, 2005**

Seconded to UNICEF and WHO for 7 weeks following the December 2004 tsunami. Designed reconstruction of the municipal landfill and sludge treatment facility serving 400,000 people, as well as the maintenance facility for the Banda Aceh Department of Public Works. Specified sludge collection trucks and arranged for their procurement. Directed disposal of >500 m<sup>3</sup> of medical waste from the Banda Aceh hospital on an emergency basis. Work done under difficult conditions due to the tsunami impact on supply networks, limited engineering help and loss of key personnel in the Banda Aceh public works department.

### **Fair Lawn, New Jersey (pop. 31,000), 1990-1997 (concurrent with Pfizer and NJDEP employment)**

Mayor, 1994-1995, City Council Member, 1990-1997

Planning Board Member, 1992 - 1996, Environmental Commission Chairman, 1987-1989

- As Mayor had executive authority for 264 employees and a budget of approximately \$34 million.
- Revamped the city capital planning process, resulting in renewed attention to neglected street repaving and renovation of sewers, city buildings and the water supply and treatment system
- Championed park and public library renovation, resulting in major improvements at all 13 city parks and recreation areas, and library computerization and 50% increase in library usage.

Involvement ended due to a promotion at Pfizer that made continuing in both positions untenable.

### **Department of Environmental Protection, State of New Jersey, 1990-1991**

Assistant Commissioner responsible for the State's air pollution, water pollution, solid waste, water supply, and radiation safety programs. Directed 1,500 people and managed a budget of \$80 million.

- Led negotiations between a broad cross section of concerned parties that led to ending of ocean dumping of sewage sludge in New Jersey.
- Co-led development of methods to speed up and provide outcome certainty for projects involving remediation and re-development of brownfield contamination sites.
- Negotiated many compliance agreements with local governments and private industry.
- Oversaw development of innovative methods to establish wastewater discharge limits for toxic substances with aquatic toxicity concerns at levels below detectable concentrations.

#### **Hoffmann-La Roche, New Jersey, 1985-1990**

Manager of Corporate Environmental Affairs in charge of environmental management for Roche USA plants, and particularly the Nutley, NJ complex with a total of over 6,000 employees.

- Resolved serious air emission compliance concerns at a large diesel cogeneration facility.
- Directed the removal and remediation for over 70 underground chemical and fuel storage tanks.
- Established a fugitive emission control program, greatly reducing manufacturing VOC emissions from a large chemical production facility.
- Managed compliance and permitting activities for air emissions, wastewater discharges, hazardous waste, and solid and medical waste.
- Hired and managed a staff of 8 colleagues.

#### **Schering-Plough, New Jersey, 1978-1985**

Environmental Manager overseeing environmental management and capital projects for Schering's Union and Kenilworth pharmaceutical manufacturing plants, with a total of over 1,800 employees.

- Initiated a hazardous waste management program and managed waste disposal contracting.
- Obtained air, wastewater and waste permits and managed compliance and reporting. Greatly improved compliance at the facilities.
- Discovered and led investigation of serious chromium and VOC groundwater contamination.
- Project manager for several multi-million dollar capital projects from design through start-up, including a facility to crush and dispose of waste pharmaceutical products, a system to use waste solvent in plant boilers as fuel, reconstruction of process sewers, a new large industrial steam boiler installation and drilling of cooling water supply wells.
- Licensed operator for an industrial wastewater treatment plant.

#### **Inmont Corporation, New Jersey, 1975-1978**

Process/Environmental Engineer in Corporate Engineering Group

- Led process engineering design for a new ink manufacturing plant in Bramalea, Ontario.
- Project manager for design and installation of an innovative air flotation wastewater treatment plant at the then world's largest trout farm and processing plant in Idaho. Developed methods to recycle all non-food parts and waste produced by the trout.
- Designed systems to reduce asbestos exposures at two adhesive plants (before asbestos was banned) and led projects to install ventilation and air pollution control systems.
- Conducted air emission testing for VOCs at a variety of printing and ink manufacturing plants.

#### **Department of Environmental Protection, State of New Jersey, 1972-1975**

Senior Environmental Engineer responsible for conducting industrial air pollution investigations. Inspected a wide variety of manufacturing facilities that were then in New Jersey, with a focus on non-ferrous metal smelting, paint and pigment manufacturing and pharmaceutical manufacturing.

#### **Education:**

**Harvard Business School:** Executive Leadership Program, 2003

**New Jersey Institute of Technology:** MS in Environmental Engineering, 1982

**University of Michigan:** BS in Civil and Environmental Engineering, 1972

**Professional Engineer** in New Jersey, 1978

## **Publications and Presentations**

Numerous papers were presented at various national and international conferences. Subjects included:

- Remediation of lead contamination in low and moderate income country community settings (ISES conference, Utrecht, Netherlands, October 2016, and other conferences)
- Rapid assessment of pesticide contaminated sites (ISES conference, Las Vegas, NV, USA, October 2015)
- Rapid assessment of POPs and pesticide contamination sites – a simplified method and innovative data management system developed for Vietnam (International Conference on Contaminated Sites, Bratislava, Slovakia, 2013)
- Review of the health impact related to toxic chemical contamination sites in developing countries
- Environment, health and safety management programs for India pharmaceutical manufacturers
- Supply chain environment and safety assurance programs for pharmaceutical manufacturing
- Treatment of fish processing wastewater using a novel dissolved air flotation system
- Co-author on 5 papers related to toxic contamination assessment and risk reduction

## **Volunteer Activities:**

### **Treasurer and Board of Directors member, Peaceworks, 2007-Present**

Central America relief organization based in Union, NJ. Participated in field assessments of development and aid needs in Nicaragua, including water supply and reforestation.

### **Founding Board Member, Brewster Ponds Coalition – 2014-2018, and on-going Technical Adviser**

Organization to protect and restore the over 80 freshwater ponds in Brewster, Cape Cod, Massachusetts

- Designed and led efforts to improve water quality and reduce the risk of cyanobacteria blooms in a kettle-hole lake by means of macrophyte harvesting. (Paper to be submitted in 2021.)

## **Significant Contamination Remediation Project Experience:**

### **For Pure Earth**

**Dong Mai, Vietnam** – Investigation and design of remediation measures for a village contaminated with lead due to lead acid battery recycling in homes and small shops, resulting in very high blood lead levels in children. Lead contaminated soils were covered with clean soil, houses and patios were washed, and community and worker education was provided.

**Kathgora, Savar, Bangladesh and Patna, India** - Investigation and design of remediation measures for villages contaminated with lead due to lead acid battery recycling in homes and small shops, resulting in very high blood lead levels in children. Lead contaminated soils were buried or covered with clean soil, houses and patios were washed, streets were paved and community and worker education was provided.

**Hargeisa, Somaliland** – Investigation and remediation design for a POPs pesticide depot where contamination was spread as a result of bombing during the civil war. This became an acute concern due to >200 internally displaced persons moving near the depot. Work is in progress.

**Former Soviet Union countries and Vietnam** – Development of a rapid environmental assessment process for pesticide contamination sites, as part of a FAO comprehensive pesticide management project for the former Soviet Union region and, in a separate project, Vietnam. The process allowed effective risk assessment and prioritization of sites for further attention with limited resources.

**Zamfara, Nigeria** – Investigation and remediation of widespread lead contamination in 5 villages and 1 town related to artisanal gold mining in lead ores. The lead soil waste was spread throughout the villages resulting in extensive poisoning of children (>600 deaths). Project involved removal of the contaminated soil from each contaminated house and yard, and construction of 7 landfills constructed for the waste, including mapping contamination, training local workers and supervisors, landfill site selection, landfill design, contractor management, community education and interface, and monitoring of results.

**Cinangka, Indonesia** – Remediation of lead contamination around a football field used by >1,000 schoolchildren, from used lead acid battery recycling in the adjacent town. A secure containment facility was constructed under the football field and all lead waste disposed in it.

**Tegal, Indonesia** – Detailed site investigation and design of remediation measures to address widespread lead contamination in a village of over 3,000 people, related to lead acid battery recycling and other metal smelting activities. A project for about \$3 MM USD was designed but has not yet been implemented due to inability for the government to decide to act and funding limitations.

**Kabwe, Zambia** – Led design and start-up of remediation work for lead contamination in about 100 yards and homes in this highly contaminated city, related to historic lead mining and smelting. The project is a demonstration project to show cost-effective remediation methods, with the hope that further funding will be available for remediation of the over 2,000 contaminated homes.

**Columbia, Nigeria, Burkina Faso and Indonesia** – Visited various artisanal gold mining sites to review mining practices, use of mercury in gold extraction and related health hazards to workers and their families. Mining operations included hard rock mines, placer mining and manual excavation in earth or soft rock pits and holes. Mercury use was both in water screens, manual mixing and extraction in pans, and using ball mills, with and without mercury recovery in condensers.

### **Prior to Pure Earth**

**India** – Investigation and remediation of PCB contamination from transformer leaks, a medical and chemical waste disposal area, and VOC groundwater contamination – approx. \$3 MM

**Argentina** – Investigation and remediation of contamination at a chemical wastewater lagoon and a medical waste disposal area. Also addressing nitrate groundwater contamination on agricultural land through phytoremediation and VOC groundwater contamination at a solvent recovery facility through pumping and above ground treatment - > \$13 MM.

**Brazil** – Investigation and remediation of VOC groundwater contamination from leaks and spills at a chemical plant - approx. \$750,000 MM

**Mexico** – Investigation and remediation of VOC and oil contamination in groundwater from chemical production activities and a legacy industrial waste disposal area - >\$2 MM

**Puerto Rico** – VOC contamination investigation at pharmaceutical factory in a complex Karst geology setting - >\$3 MM

**Indiana, USA** – Investigation and remediation of PCBs in wastewater lagoons and drainage channels as wells as organic sludges from pharmaceutical production on agricultural lands - >\$ 15 MM

**Michigan, USA** – Investigation of VOC and chlorinated VOC contamination in groundwater from chemical production activities leading to construction of subsurface slurry containment walls around the site. Also remediation of PCB contamination from transformer leaks - >\$30 MM

**New Jersey, USA** – Investigation and remediation of VOC contamination and chlorinated VOC from underground tank releases and chemical production activities. Over 70 tanks removed - >\$10MM

**New Jersey, USA** – Investigation of chromium in soil and groundwater from former chemical plant lagoon. Also investigation of VOC in soil and groundwater. Eventual remediation cost >\$30 MM

**New York, USA** – Investigation and remediation of mercury and lead contamination from former pharmaceutical production activities as wells as VOC, chlorinated VOC and oil contamination related to underground tank releases - >\$7.5 MM

**New York, USA** – Investigation of a radioactive material leak to groundwater from a small nuclear reactor used to make medical products – eventual remediation cost >\$20 MM