



@north pole, September 2024

Current position:

Research fellow, principal investigator, Tropical Marine Science Institute, National University of Singapore

Courtesy joint appointment at Department of Geography, National University of Singapore

Bio:

Mengli Chen, PhD (2016, Nanyang Technological University and Singapore-MIT Alliance on Research and Technology), specializes in marine pollution and the environmental impacts of maritime decarbonization. Using isotopes, she traced the global/regional rise of lead pollution driven by gasoline and then electrification. She redefined the marine lead cycling by her discovery of 'pb boundary exchange' process. Her recent work focuses on developing environmental impact matrices for alternative marine fuels. She led the marine environmental assessment of the world's first ammonia bunkering in Singapore (2024). Mengli is a Principal Investigator at NUS's Tropical Marine Science Institute and teaches in the Department of Geography, nurturing the young generation with the latest marine environmental issues and solutions.

In the Rear-View Mirror: A Century of Global Lead Pollution from Gasoline

Abstract:

A century-long experiment in global pollution from leaded gasoline has just been completed with the full results still uncertain. Looking in the rear-view mirror, we see a major global pandemic caused by massive environmental contamination with lead. Since no level of blood lead in a child can be regarded as safe, it follows that hundreds of millions of children born in the 20th century were victims of automotive lead exposure. It took a revolution in medicine and major advancements in risk science and cost-benefit analysis to dismantle the hegemonic science of the lead industry and fully expose the magnitude of the lead poisoning pandemic and the economic and human health impacts. Subsequent ban of leaded gasoline has resulted in lower levels of lead in the atmosphere and surface seawaters, along with substantial reductions in blood lead levels of people worldwide, a testament to the willingness of humanity to deal with global environmental challenges. Legacy pollution from the leaded gasoline world persists in our environment while subsequent shifting of leaded gasoline consumption and the migration of emerging sources of lead to developing world has given rise to current global inequality in childhood lead poisoning. The pandemic from lead in gasoline will not be the last one of its kind that the world faces and lessons from the leaded-gasoline world can help us in dealing with future pandemics that may be associated with other chemical toxins in the environment. Furthermore, the pandemic had a long-lasting impact on public health practice and the lessons learned can open new research perspectives and policy needs.