OCEESA

Webinar for Overseas Chinese Environmental Engineers & Scientists Association

海外華人環境保護學會環境議題網上論壇（三）

Key Environmental Issue Webinar
Section 3
March 7th, 2021, 6:00-7:30 PM PST
March 8th, 2021, 10:00-11:30 AM CST

Registration

Recovering Rare Earth Elements from Coal Mine Drainage through Mine Reclamation

In this study, we demonstrated an integrated process that effectively recovers rare earth elements (REEs) from coal mine drainage (CMD). Results suggest that all of the tested industrial by-products are very effective in retaining CMD REEs (over 98%) under both percolation and completely mixed conditions. The extraction/precipitation procedure effectively remobilizes retained REEs from the spent solids (over 90%) and forms a REE concentrate (>7.5% total REEs). The engineering-economic costs and net energy, net CO_2 emissions, and water and other requirements were investigated to understand the economic and environmental implications of this process. The demonstrated process can be integrated with abandoned mine land reclamation to create a commercially viable approach that can provide reliable economic incentive to mitigate CMD and restore lands that are adversely impacted by historical mining.

Dr. Chin-Min CHENG

Senior Research Engineer, Department of Civil, Environmental, and Geodetic Engineering, The Ohio State University

Dr. Chin-Min Cheng is the lead research scientist of the Coal Combustion Products Program at the Ohio State University. He received his doctoral degree in Environmental Engineering from the Ohio State University. Following graduation, he joined the Institute for Combustion Science and Environmental Technology at Western Kentucky University as a research scientist and later became the manager of the Emission Laboratory. At Ohio State, Dr. Cheng leads research efforts dedicated to coal combustion by-products and coal mines, which include high volume beneficial use, reclamation, and drainage remediation. Dr. Cheng serves as the principal and co-investigator for over 30 research and engineering projects.

Reflection from disaster cases-the significance of intrinsic hazard characteristic parameters to industrial process safety

The process safety information in the 14 elements for processes safety management proposed by OSHA is a significantly important part. Among them, the intrinsic property hazard characteristics of chemicals are considerable information that must be understood in all processes. To begin with, the fundamental factor of the explosion disaster in the pesticide plan in central Taiwan is the lack of comprehension of the intrinsic property hazards of hydrogen peroxide, which led to operational errors and caused the factory to explode. Secondly, we discussed the impact of weather on the intrinsic property hazard characteristics of the catalyst and dust. This study's main target interprets past failures as lessons and proposes solutions that can be used by those in the chemical manufacturing industry to avert such incidents in the future.

Prof. Chi-Min SHU

Distinguished Chair Professor, Process Safety and Disaster Prevention Laboratory, Department of Safety, Health, and Environmental Engineering, National Yunlin University of Science and Technology (YunTech)

Prof. Chi-Min Shu is Distinguished Chair Professor of National Yunlin University of Science and Technology (YunTech), Taiwan. He has received honors as four Fellows (AIChE, IET, NATAS, and RSC) and Mettler Toledo Award (the highest award in the field of Thermal Analysis since 1968). In 2015–2019, he was the first scholar in the field of chemical process safety at the Environmental Impact Assessment (EIA) Committee, accredited by Environmental Protection Administration of the Executive Yuan, Taiwan. During his career, he has spearheaded numerous disaster management programs and monitored crisis management events by generously sharing his wide-ranging chemical engineering skills across Asia. Currently, he is one of the outstanding scholars of the area of chemical process safety in the world.

Website: http://oceesa.org/ | Contact Dr. Ben Leu (svleu@polyu.edu.hk) for certificate of participation.