

RECYCLING METALS FROM INDUSTRIAL WASTE

**A Short Course and Workshop
with Emphasis on Plant Practice**

**June 27 - 29, 2017
Golden, Colorado
25th Year**

**Sponsored by the Colorado School of Mines
Course Organizer: Paul B. Queneau, Adjunct Professor**

PURPOSE AND SCOPE

This program focuses on current plant practices to convert metal-containing wastes to products. Processors, raw materials, and markets are identified and quantified. Speakers with decades of hands-on experience detail multiple approaches to recycling metals and associated materials — backed up by slides, videos, and the syllabus.

Particular emphasis is given to combinations of physical, hydrometallurgical, and pyrometallurgical processing, along with associated regulations, to facilitate economical recycling. The presentations are on a practical level, focusing on plant operations, with ample opportunity for interaction by the course participants.

PROGRAM OUTLINE AND SCHEDULE

Tuesday Morning, June 27, 2017

7:45 **Registration**

8:30 *Twenty-Five Years of Recycling at Stillwater Mining's Smelter*
Kendra Meier and Matt Stevens, Recycling and Metallurgical Process
Coordinators, Stillwater Mining, Columbus, MT

9:00 *Recycling Silver*
Roger Neuscheler, Director of Engineering, Silver Anvil Engineering,
Lone Tree, Colorado

9:30 **Break**

9:45 *Environmental Compliance: What You Don't Know Can Hurt You!*
David Waggoner, Chief Scientist / Director of Environmental Management,
Institute of Scrap Recycling Industries, Washington, DC

10:15 *Think Your Waste Stream is Hard to Recycle? Think Again.*
Darci Ray-Ackerman, VP & Director of Growth & New Ventures,
The Heritage Group, Indianapolis, IN

10:45 **Break**

11:00 *Maximizing Recovery: Secondary Impacting and Material Shaping*
Peter Schirk, Recycling Division Sales Manager, BHS-Sonthofen,
Charlotte, NC

11:30 **Networking Time, Followed by Lunch**
Colorado School of Mines Green Center

Tuesday Afternoon, June 27, 2017

1:00 *Three Decades of Hydrometallurgical Recycling of Non-ferrous Materials
at Hydrometal*
Faïdjiba Loe-Mie, Sales and Technical Engineer, Jean Goldschmidt
International, Brussels, Belgium

1:30 *Application of Hydrometallurgy for Extraction of Lead from Galena Ore*
Tim Hymer, Manager of Research and Technical Development,
The Doe Run Company, St. Louis, MO

2:00 **Break**

2:15 *The Invisible Threat: Fatigue Risk Management*
Mitch Cowart, Safety Services Account Manager, Caterpillar,
Albuquerque, NM

3:15 **Break**

3:30 *Keep Your Plant from Failing Due to Poor Pilot Design*
David Sanguinetti, President, Sanguinetti Engineering, Vancouver, BC

4:00 **Social at the Colorado School of Mines' Coolbaugh Hall Atrium**

Wednesday Morning, June 28, 2017

- 8:30** *Aurubis Multi-Metal Recycling: An Update*
Trevor Landry, Manager, Recycling and Precious Metals, Aurubis AG,
Buffalo, NY
- 9:00** *Precious Metals: Global Challenges, Consequences, and Prospects*
Mike Mooiman, President, Argo Advisors International,
North Attleboro, MA
- 9:30** **Break**
- 9:45** *Transformation: Entrepreneur to Project Management*
Tom Delia, Recycling Specialist, Gratiam Inc., Hudson, NY
- 10:15** *Synergy: The Cement and Aluminum Industries*
Dave Gossman, Chief Investigator, Gossman Forensics,
Maquoketa, IA
- 10:45** **Break**
- 11:00** *The Critical Aspect of Capital Cost Estimation & Project Execution Failures*
Corby Anderson, Harrison Western Professor, Kroll Institute for Extractive
Metallurgy, Colorado School of Mines, Golden CO
- 11:30** **Networking Time, Followed by Lunch**
Colorado School of Mines Green Center

Wednesday Afternoon, June 28, 2017

- 1:00** *25-Year Metal Recycling Workshop: Retrospective, and the Next 25*
Phil Mackey, President, P.J. Mackey Technology, Montreal, QC
Joe Ferron, President, HydroProc Consultants, Peterborough, ONT
- 1:30** *Emergency Response to Release of Hazardous Substances*
Bill Krulac, President, Complete Waste Management, Pittsburgh, PA
- 2:00** **Break**
- 2:15** *Co-Product Development in the Processing of Titanium Ores*
Tom Battle, Consulting Metallurgical Engineer, Tom Battle and Associates,
Charlotte, NC
- 2:45** *Indium Recovery from Waste LCD Screens*
Tom Boundy, Research Assistant, Colorado School of Mines,
Golden, CO
- 3:15** **Break**
- 3:30** *Tungsten and Molybdenum Powders / Specialty Products*
Tony Smith, R&D Manager, Global Tungsten and Powders,
Towanda, PA
- 4:00** **Social at the Colorado School of Mines' Geology Museum**

Thursday Morning, June 29, 2017

8:30 *Metals from Water Treatment and Ion Exchange*

Jerry Downey, Professor, Montana Tech, Butte, MT

9:00 *Silver, Zinc, Fertilizers, and Related Technologies & Products*

John W. Whitney, President, Itronics, Inc., Reno, NV

9:30 **Break**

9:45 *Spent Refinery Catalyst Processing*

Dave Lewis, Director of Technical Services, AMG Vanadium,
Cambridge, OH

10:15 *Secondaries Out of Trail*

Tammy Salway, Senior Engineer – Raw Materials, Teck Resources,
Trail, BC

10:45 *What a New CSM MetE Graduate Does*

Joe Grogan, Director R&D, Gopher Resource, Eagan, MN

11:15 *Adjourn*

COMMENTS FROM PAST PARTICIPANTS

This is my third year attending this short course; I plan to return in 2017. Presentation topics and contents were excellent. It's amazing to see year after year the world-class companies, as well as so many of the brightest minds in industry.

Jason Evens, General Manager, US Ecology, Canton, OH

The best conference about recycling & metal processing; perfectly organized. It is a wonderful opportunity to share experiences with people from very diverse horizons.

Patrick Weerts, Commercial Manager, Fortis Metals,
Mortsel, Belgium

CSM provides an excellent forum for industry to share knowledge, experience and friendship. I plan to attend future conferences.

Bruce Kasen, Vice President, ShoreMet LLC,
Valparaiso and Nabb, Indiana

This short course's most significant strengths are the variety of topics, the variety of participants, lots of time for socializing and networking, in Golden...What a magnificent setting!

Charles Geenen, Director Technology, Metallo-Chimique,
Nieuwe, Belgium

My favorite short course / conference to attend. The business that I do always pays for the trip. The old friends that I see are fun to interact with.

Leon Welgs, VP Business Development, Blue Line Corp.,
San Antonio, TX

The one course that I must attend each year...Expertise, diversity of speakers, ability to network.

Dennis Rodal, Director R&D, ELG Haniel Metals,
McKeesport, PA

I have enjoyed this meeting very much, and found it incredibly interesting and useful. It is without a doubt one of the best specialist meetings that I have ever attended in my career.

Herman Potgieter, Professor, Manchester Metropolitan
University, Manchester, UK

REGISTRATION INFORMATION

■ Cost

The registration fee is:

\$1495 if registering by April 24

\$1595 after April 18 and by May 22

\$1695 after May 22

Included are the syllabus, continental breakfasts, luncheons, and socials.

Assistance may be available to self-employed sole consultants, retired, or unemployed attendees — Contact space@mines.edu for details.

■ Cancellations and Attendee Substitution Policy

Modification, including cancellation, of your registration requires written notice that must be emailed (space@mines.edu) or faxed (303.277.8683) to Professional Event Services (PES).

- Attendee substitutions may be made without cost penalty at any time up to the date of the start of the event.
- Cancellations will be accepted if notice of cancellation is received at the PES at least five (5) working days prior to the date of the start of the event. Registrants who cancel within this period will be charged a \$275 service fee.
- No refunds will be made to registrants who fail to cancel within the specified cancellation period.

■ Credits

CSM awards two Continuing Education units for this course.

■ Location and Attire

Golden and the Colorado School of Mines (CSM) are located at the foot of the Rockies 15 miles west of Denver. The area is steeped in western history. Mountain hiking and biking trails begin in town along Clear Creek and the whitewater park. Attire is casual.

■ Accommodations available until May 15, if blocks are not full

Blocks of rooms in Golden are at the Dove Inn (Tel: 303-278-2209; Fax: 303-273-5272), Table Mountain Inn (Tel: 303-277-9898; Fax: 303-271-0298), and the Golden Hotel (Tel: 303-279-0100; Fax: 303-215-1010). The rooms are under the designation "*Recycling Short Course*."

Golden is a popular summer destination, so book your reservation early.

■ Course Content Details

Paul Queneau at The Bear Group: 303-854-2036; fax 303-273-0494; e-mail: pqueneau@mines.edu

■ Registration Information

Professional Event Services (PES) at CSM: 303-279-5563; fax: 303-277-8683; e-mail: space@mines.edu; <http://www.csmspace.com/>

REPRESENTATIVE LIST OF PAST ATTENDEES

Agmet	GF Industries	Patrick Weerts Consulting
Air Products	Glencore Technology	Paul Wurth S.A.
Aleris	Global Steel Dust	Penoles
Alpha Metals	Global Tungsten & Metal.	Philip Services
AMAG Austria Metall	Gopher Resource	Phoenix Automotive Cores
AMG Aluminum	Greenville Metals	Pillar Induction
AMG Vanadium	Hansen Consultants	P.J. Mackey Technology
Apex Materials Technology	Harsco Metals	P. Kay Metal
Asahi Refining	Hazen Research	PM Recovery
Aurubis AG	H.C. Starck	Porocel/Catalyst Recovery
Batrec	Heraeus Precious Metals	Praxair
Battery Solutions	Heritage Environmental	Precision Cast Parts
Bear Group	Huron Valley Steel	Queens University
Befesa Steel	Hussey Copper	RSR Technologies
BioteQ	Hydrometal	RHI AG
Blue Line	HydroProc Consultants	Sabin Metal
Boliden	IBM	Saltire Services
Brick Recycling	INMETCO	Sanguinetti Engineering
Cal-Chem Metals	IPM Services	ScanArc Plasma Tech.
Catalytic Innovations	IPMI	Shell
Chevron Energy	Itronics	ShoreMet
Christian Doppler Lab	Jean Goldschmidt Intl.	Silver Anvil Engineering
Colonial Metals	J.E. Litz & Associates	SINTEF
Colt Refining	Johnson Matthey	Sipi Metals
CONECUS	Kalumetals	Solumet
CRI Metal Products	KGHM Matraco S.A.	Southeastern Minerals
CSM/Kroll Institute	Korea Inst GeoSci & MinRes	Stillwater Mining
CUPROSA	Langeloth Metallurgical	Stoller
Delft University	Lanxess Sybron	Sumitomo
DH Catalyst	LithChem Energy	Sustainable Management
Doe Run	M&M Metals International	Teck Metals
Dowa International	Manchester Metro. Univ.	Tetra Tech
Eastern Alloys	Marcuson & Associates	Tetronics International
ECS Refining	Masterloy Products	Tin Technology & Refining
E.I. DuPont	Metal & Catalyst Resources	Tonolli Canada
ELG Haniel Metals	Metallica Commodities	Torma Sorting Solutions
Energy Fuel Resources	Metallo-Chimique	Treibacher Industrie
Engitec Technologies	Metal Solutions	TTM Technologies
Erachem Comilog	Metal Tech	Umicore
EVRAZ Stratcor	Micronutrients/Heritage	U. of Leoben
Exotech	MoReW-Refractory Metals	US Ecology
5N Plus	Morris Equipment Sales	U.S. EPA
Fortis Metals	Music City Group	USGS
Francis Pitard Sampling	Natural Resources Canada	U.S. Steel
Franklin Pierce University	Network Enviro Services	U.S. Zinc
Freeport McMoRan	Nickelhuetten Aue	Vale Inco
Gannon & Scott	Ocean Partners	Veolia
Garrison Minerals	OmniSource	Wilmington Iron & Metal
Genesis Recycling Tech	Omnium - Dodge City	WM Mercury Waste
GFE Metalle und Materials	Outotec	Zinc Nacional