

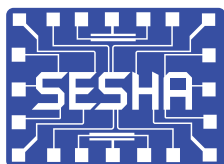


SESHA



**SESHA 44th Annual
International High Technology
ESH Symposium & Exhibition**

FINAL PROGRAM



April 4-7, 2022

Embassy Suites by Hilton • Scottsdale, Arizona



Clean Air Solutions

The one stop shop for all your abatement needs



Marathon M91 Plasma/Wet Integrated Scrubber

- Guardian™
- Marathon™
- CDO™
- Vector™

EcoSys is a world leading supplier of process exhaust gas abatement solutions. Our trusted brands include our flagship Marathon (burn/wet & plasma/wet), and the industry standards Guardian (burn), Vector (wet), and CDO (thermal-electric/wet). Each provides best-in-class performance for your challenging point of use abatement requirements. Enabling technology for any chemistry. High reliability. Expert team. Great ROI. Why trust your production to anyone else?

SESHA 44th Annual International High Technology ESH Symposium & Exposition

Table of Contents

Week-at-a-Glance.....	3
Session/Event Grid	7
Exhibitors	15
Professional Development Courses	21
Embassy Suites by Hilton Floorplan.....	24

Convention Hotel

Embassy Suites by Hilton
 Scottsdale Resort
 5001 N. Scottsdale Road
 Scottsdale, Arizona, 85250
 Guest Phone: 480-949-1414

Registration Hours:

Chaparral Conference Center, Silverman Foyer

Monday, April 4	3:00 pm-5:30 pm
Tuesday, April 5	7:30 am-5:00 pm
Wednesday, April 6	8:00 am-4:00 pm
Thursday, April 7	8:00 am-Noon

Important CM Point Information

Please see the registration desk for a certificate of participation for CM Points.

This event contains the following technical content hours. (PDCs are additional)

- Tuesday - 6 technical hours
- Wednesday - 6 technical hours
- Thursday - 5 technical hours

These may be eligible for ABIH and BCSP CM credit. See ABIH website (www.ABIH.org) and BCSP website (www.BCSP.org) for CM credit criteria.

Exhibit Hall Hours:

Chaparral Conference Center, Kiva I-Paloma III

Tuesday, April 5	10:00 am-7:00 pm
Break	10:15 am-10:45 am
Lunch & Raffle Ticket Distribution	11:30 am-1:00 pm
Break & Raffle Ticket Distribution	3:00 pm-3:30 pm
Opening Reception & Raffle Ticket Distribution/Drawing	5:00 pm-7:00 pm
Wednesday, April 6	9:00 am-4:00 pm
Break & Raffle Ticket Distribution.....	9:30 am-10:00 am
Lunch & Raffle Ticket Distribution/Drawing ...	11:30 am-1:00 pm
Break & Raffle Ticket Distribution/Drawing.....	3:00 pm-3:30 pm

Thank you to the following SESHHA Sponsors

COBALT

bsi.

DIAMOND

ASM 

PLATINUM

 **intel.** 

GOLD

 **DOD Technologies, Inc.**
Innovative Life Safety Systems & Services

 **ERM**

SILVER

 **AIRGARD**  **Assent**  **centrotherm**
clean solutions  **Honeywell**

BRONZE

 **BGI**
Banda Group
International LLC

 **BELFOR** 
PROPERTY RESTORATION

 **CS CLEAN SOLUTIONS**

 **DAS**
Environmental Experts.

 **EBARA**

 **ECOSYS**

 **GlobalFoundries™**

 **UE PRECISION SENSORS**

 **SALUS**
Engineering International

 **Spectrum**
ENVIRONMENTAL SOLUTIONS

 **suez**

Week Schedule-at-a-Glance

All Sessions take place in the East Complex

MONDAY, APRIL 4

PDC #1 – Silane/Disilane Safety

Eugene Ngai

1:00 pm-5:00 pm *Mohave I*

PDC #2– Nanoparticles in Occupational Environment: Insights for Detection, Modeling and Risk Assessment

Andrey Korchesvskiy, Daniel Hall, Matthew Hull, Cary Hill, Steve Trammell

1:00 pm-5:00 pm *Mohave II*

PDC #3– S2 Breakdown!! - How to critically review the key sections of an S2 Report

Chris Evanston, John Visty

1:00 pm-5:00 pm *Mohave III*

Registration

3:00 pm-5:30 pm *Silverman Foyer*

TUESDAY, APRIL 5

Registration

8:00 am-5:00 pm *Silverman Foyer*

Opening Ceremony

Matt Wyman (Outgoing SESHA President)

8:30 am-9:15 am *Mohave I & II*

Keynote Presentation - The Silver Lining in the COVID Cloud

Jeff Donnell

9:15 am-10:15 am *Mohave I & II*

Exhibits

10:00 am-7:00 pm *Kiva I-Paloma III*

Break, sponsored by Edwards

10:15 am-10:45 am *Kiva I-Paloma III*

Concurrent Sessions

10:45 am-11:30 am *Various Locations*

Complimentary Lunch - Raffle Ticket Distribution, sponsored by DOD Technologies

11:30 am-1:00 pm *Kiva I-Paloma III*

Concurrent Sessions

1:00 pm-3:00 pm *Various Locations*

Break, sponsored by Ebara Technologies, Inc.

3:00 pm-3:30 pm *Kiva I-Paloma III*

Concurrent Sessions

3:30 pm-5:00 pm *Various Locations*

Opening Reception - Raffle Ticket Distribution & Raffle Drawing, sponsored by Airgard

5:00 pm-7:00 pm *Kiva I-Paloma III*

WEDNESDAY, APRIL 6

Camelback Hike

6:00 am *Off-site*

Registration

8:00 am-4:00 pm *Silverman Foyer*

Keynote Presentation - Tech Fusion: Incorporating the Latest Cutting Edge Technologies into EHS

Xavier Alcaraz, Dale Goss

8:30 am-9:30 am *Mohave I & II*

Exhibits

9:00 am-4:00 pm *Kiva I-Paloma III*

Break - Raffle Ticket Distribution, sponsored by CS Clean Solutions

9:30 am-10:00 am *Kiva I-Paloma III*

Concurrent Sessions

10:00 am-11:30 am *Various Locations*

Complimentary Lunch - Raffle Ticket Distribution & Raffle Drawing, sponsored by Centrotherm

11:30 am-1:00 pm *Kiva I-Paloma III*

Concurrent Sessions

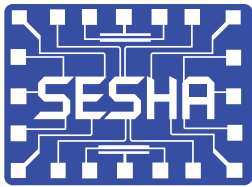
1:00 pm-3:00 pm *Various Locations*

Break - Raffle Ticket Distribution & Raffle Drawing, sponsored by Edwards

3:00 pm-3:30 pm *Kiva I-Paloma III*

Concurrent Sessions

3:30 pm-5:00 pm *Various Locations*



SAVE THE DATE

SESHA 45th Annual International High Technology ESH Symposium & Exposition

Scottsdale, AZ

Join us for five days of education, networking, and professional development



Ebara is an innovative global provider of vacuum pumps and advanced exhaust management solutions. Work with Ebara Technologies to replace your old wet scrubbers with new Point-of-Use abatement systems; Model G-WS1000. This wet scrubber system has been competitively designed to treat effluent gases that are water reactive and water soluble.



Model GWS1000

**Visit us at Booth #4 to
discuss your requirements!**



Week Schedule-at-a-Glance

THURSDAY, APRIL 7

5K Run

6:30 am-7:00 am *Off-site*

Registration

8:00 am-Noon *Silverman Foyer*

Keynote Presentation - Technology facilitated interventions for Behavioral Health in the workplace

Kevin Winters
8:30 am-9:30 am *Mohave I & II*

Break, sponsored by Edwards

9:30 am-10:00 am *Silverman Foyer*

Concurrent Sessions

10:00 am-11:30 am *Various Locations*

Complimentary Lunch

11:30 am-1:00 pm *Kiva I-Paloma III*

Concurrent Sessions

1:00 pm-2:15 pm *Various Locations*

Break

3:15 pm-3:30 pm *Kiva I-Paloma III*

Concurrent Sessions

3:30 pm-4:15 pm *Various Locations*

Closing Ceremony

Steve Trammell (Incoming SESH A President)
4:15 pm-5:00 pm *Mohave I & II*

No Harm Done

centrotherm
clean solutions

SESHA 2022

Booth #18

Dry Bed Absorption

- AsH₃
- H₂Se
- Metal organics
- TBA
- TDMAT
- TiCl₄

Wet Scrubber

- Wet Bench: NH₃, NO_x, HCl
- BCl₃, Cl₂, F₂
- HBr, HCl, HF
- NH₃, SiF₄
- SiH₂Cl₂
- WF₆

Thermal Treatment

- 3MS, 4MS
- CHF₃, CF₄
- C₂F₆, C₄F₈
- C₃F₈, NF₃
- SF₆
- B₂H₆
- ClF₃, PH₃
- SiH₄, TEOS

Gas & Wastewater Treatment

www.centrotherm-cs.de/en/

SALUS

Engineering International

Technically Superior S2 Services

- **Electrical**
- **Industrial Hygiene**
- **Mechanical**
- **Ergonomics**
- **Ventilation**
- **Training with practical applications**
- **Full Service Provider**

Engineering Risk Management

When your complex industrial process raises safety concerns but S2 is not the right fit

SEE US AT BOOTH #34

Offices

Main Office - California / Santa Clara

*** Japan * Korea * Singapore * Colorado**

<http://www.salusengineering.com/>

SESHA Schedule – 2022 Annual Symposium

All Sessions take place in the East Complex

MONDAY		TUESDAY	
1:00 pm-5:00 pm 1:00 pm-5:00 pm	PDC #1 – Silane/Disilane Safety. <i>Eugene Ngai. Mohave I</i> PDC #2 – Nanoparticles in Occupational Environment: Insights for Detection, Modeling and Risk Assessment. <i>Andrey Korchesvskiy, Daniel Hall, Matthew Hull, Cary Hill, Steve Trammel. Mohave II</i>	1:00 pm-5:00 pm 3:00 pm-5:30 pm	PDC #3 – S2 Breakdown!! - How to critically review the key sections of an S2 Report. <i>Chris Evanston, John Visty. Mohave III</i> Registration. Silverman Foyer
8:00 am-5:00 pm 8:30 am-9:15 am	Registration. Silverman Foyer Opening Ceremony . <i>Matt Wyman (Outgoing SESHA President). Mohave I & II</i>	11:30 am-1:00 pm 1:00 pm-3:00 pm 3:00 pm-3:30 pm	Complimentary Lunch - Raffle Ticket Distribution. Sponsored by DOD Technologies. Kiva I-Paloma III Concurrent Sessions Break - Raffle Ticket Distribution. Sponsored by Ebara. Kiva I-Paloma III
9:15 am-10:15 am 10:00 am-7:00 pm 10:15 am-10:45 am 10:45 am-11:30 am	Keynote Presentation. The Silver Lining in the COVID Cloud. <i>Jeff Dannel. Mohave I & II</i> Exhibits. Kiva I-Paloma III Break. Sponsored by Edwards. Kiva I-Paloma III Concurrent Sessions	3:30 pm-5:00 pm 5:00 pm-7:00 pm	Concurrent Sessions Opening Reception - Raffle Ticket Distribution & Raffle Drawing. Sponsored by Airgard. Kiva I-Paloma III
Mohave I & II		Mohave III	
FTIR		FIT TEST	
10:45 am	Applying FTIR multi-gas measurement technology to solving fab air quality issues. <i>Jim Cornish</i>	10:45 am	Quantitative vs Qualitative Fit Testing - Understanding the gaps in your fit test systems. <i>Dylan Staack</i>
ROUND TABLE		SUSTAINABILITY	
1:00 pm	The 7 Deadly Sins of Environmental Compliance	1:00 pm	Using an ISO 50001 Energy Management Systems Framework to Support GHG and Carbon Strategies via Life Cycle Assessment. <i>Melita Elmore</i>
		1:45 pm	ESG Imperatives for the Semiconductor Industry. <i>Monica Wright</i>
		2:15 pm	Implementation of an energy and resource saving solution for the subfab. <i>Joe Van Gompel</i>
THE HUMAN FACTOR		ABATEMENT	
3:30 pm	Situational Awareness for Environmental Safety & Health Professionals. <i>Richard B. Gasaway</i>	3:30 pm	Emission Control from Semiconductor Wafer Fabrication. <i>Scott Bayon</i>
4:15 pm	Understanding Human Error During Investigations. <i>Richard B. Gasaway</i>	4:00 pm	Direct Water Reuse in PoU Gas Abatement applications. <i>Joerg Winter</i>
		4:30 pm	Benefits of Application Specific Abatement Strategy and Subtool Design. <i>Justin Weinstein</i>



For more information about the sessions, scan the QR Code or visit: [sesha-44th-annual-symposium](https://sesha.org/event/sesha-44th-annual-symposium)

Environmental, Safety and Health Professional Services



Safety and Health Consulting Services

Environmental Remediation Services

Scientific and Technical Support

Construction Management Services

Industrial Hygiene Services

Security & "Q" Cleared Security Escorts

Nuclear Safety Oversight

Arizona | New Mexico | Tennessee



www.bandagroupintl.com

MBE | SDB | SDVOSB

480.636.8734

All Sessions take place in the East Complex

WEDNESDAY		Mohave I & II	Mohave III	Fiesta I & II
6:00 am	Camelback Hike. Off-site			Concurrent Sessions
8:00 am-4:00 pm	Registration. Silverman Foyer			Complimentary Lunch - Raffle Ticket Distribution & Raffle Drawing. Sponsored by <i>Centrotherm</i> . Mohave Terrace
8:30 am-9:30 am	Keynote Presentation. Tech Fusion: Incorporating the Latest Cutting Edge Technologies into EHS. <i>Xavier Alcaraz, Dale Goss.</i>			Concurrent Sessions
9:00 am-4:00 pm	Mohave I & II			Break - Raffle Ticket Distribution & Raffle Drawing. Sponsored by <i>Edwards</i> . Kiva I-Paloma III
9:30 am-10:00 am	Exhibits. Kiva I-Paloma III			Concurrent Sessions
	Break - Raffle Ticket Distribution. Sponsored by <i>CS Clean Solutions</i> . Kiva I-Paloma III			
		Mohave I & II	Mohave III	Fiesta I & II
	GAS DETECTION	BOOTCAMP	BOOTCAMP	CHANGES IN EHS
10:00 am	Advancements In Colorimetric Gas Detection Technology. <i>Brad Dyer</i>	10:00 am	Bootcamp	10:00 am
10:30 am	Mass Spectrometry for Life Safety Systems (LSS). <i>Mark Sherrett</i>			10:45 am
11:00 am	Evaluating Oxygen Deficiency and Toxic Gas Hazards Using CFD Modeling. <i>Daniel Hall, Steve Trammell</i>			
	ENVIRONMENTAL	BOOTCAMP	BOOTCAMP	CHANGES IN EHS
1:00 pm	Innovative EHS Compliance Tools. <i>Michael Zimmerman</i>	1:00 pm	Bootcamp	1:00 pm
1:45 pm	Navigating the Transition to the Circular Economy: Adventures in E-Waste. <i>Lee Read</i>			1:45 pm
2:30 pm	RCRA Subpart AA/BB/CC – Hazardous Waste Tank Emissions Management. <i>Tanner Houston</i>			2:30 pm
	ENERGETICS	BOOTCAMP	BOOTCAMP	FAB COMPLIANCE
3:30 pm	Safety Aspects And Considerations For Vacuum And Exhaust Management Of Hazardous And Energetic Materials Within Polysilicon Processes. <i>Steve Cottle</i>	3:30 pm	Bootcamp	3:30 pm
4:15 pm	Metal Organic/Energetic Fire Code Updates 2022. <i>Matt Wyman</i>			4:15 pm

Important CM Point Information

Please see the registration desk for a certificate of participation for CM Points. These may be eligible for ABIH and BCSP CM credit. See ABIH website (www.ABIH.org) and BCSP website (www.BCSP.org) for CM credit criteria.

This event contains the following technical content hours. PDCs are additional. PDC Course Descriptions are on page 21.

Tuesday - 6 technical hours
 Wednesday - 6 technical hours
 Thursday - 5 technical hours

All Sessions take place in the East Complex

<p>6:30 am-7:00 am 5K Run. Off-site Registration. Silverman Foyer</p> <p>8:00 am-Noon Keynote Presentation. Technology facilitated interventions for Behavioral Health in the workplace. <i>Kevin Winters. Mohave I & II</i></p> <p>8:30 am-9:30 am Break. Sponsored by Edwards: Silverman Foyer</p> <p>9:30 am-10:00 am Concurrent Sessions</p> <p>10:00 am-11:30 am Concurrent Sessions</p>	<p>11:30 am-1:00 pm Complimentary Lunch. Sponsored by SESHA. Mohave Terracer</p> <p>1:00 pm-2:15 pm Concurrent Sessions</p> <p>3:15 pm-3:30 pm Break. Silverman Foyer</p> <p>3:30 pm-4:15 pm Concurrent Sessions</p> <p>4:15 pm-5:00 pm Closing Ceremony. <i>Steve Trammell (Incoming SESHA President) Mohave I & II</i></p>
<p style="text-align: center;">Mohave I & II</p>	
<p style="text-align: center;">Mohave III</p>	
<p style="text-align: center;">EXPLOSION</p>	
<p>10:00 am Controlling and Understanding Sensitized Ammonium Nitrate Hazards in Semiconductor Facility Ductwork. <i>Stefan Uhlenbrock</i></p> <p>10:45 am Blowing up will ruin your whole day. <i>Chris Wrenn</i></p>	<p>10:00 am Best Practices for adapting your Ergonomics Program for Hybrid and Remote Work. <i>Chris Arterberry</i></p> <p>10:45 am Ergonomic Hazard Assessment in Fast-Paced Semiconductor Lab R&D Environment. <i>Gus Arroyo</i></p>
<p style="text-align: center;">ENVIRONMENTAL</p>	
<p>1:00 pm A novel non-phosphorus cooling water treatment technology to address environmental and operational challenges. <i>Ashok Shetty</i></p> <p>1:30 pm Disilane Furnace Process – Environmental Challenges. <i>Christopher P. Jones</i></p> <p>2:00 pm How to Prepare Your Facility for PFAS Regulations on The Horizon. <i>John Goetze</i></p> <p>2:30 pm Enzymatic Cleaning Restores the Performance of Biofouled Membranes at Mild Conditions. <i>Nick Popolizio</i></p>	<p>1:00 pm Development of Handbook of Risk in Semiconductor Manufacturing. <i>Vincent DeGiorgio</i></p> <p>1:45 pm Development of a First-of-a-kind Risk Based Process Safety Program in the Semiconductor Industry. <i>Param Subramanian</i></p> <p>2:30 pm Risk Assessment for Collaborative/Autonomous Mobile Robots, and Case Studies. <i>Mollie Anderson, Daniel Chodos</i></p>
<p style="text-align: center;">ACCIDENTS/ INCIDENTS</p>	
<p>3:30 pm Accidents and Incidents Roundtable. <i>Troy McCuskey</i></p>	<p>3:30 pm Chemical Security Regulatory Update: How to Ensure Compliance, Increase Safety and Mitigate Risk. <i>Marcia Stone</i></p>
<p style="text-align: center;">CHEMICAL SECURITY</p>	

THURSDAY

Registration Hours: *Chaparral Conference Center, Silverman Foyer*

Monday, April 4	3:00 pm-5:30 pm
Tuesday, April 5	7:30 am-5:00 pm
Wednesday, April 6	8:00 am-4:00 pm
Thursday, April 7	8:00 am-Noon



For more information about the sessions, scan the QR Code or visit: sasha.org/event/sasha-44th-annual-symposium

DAS

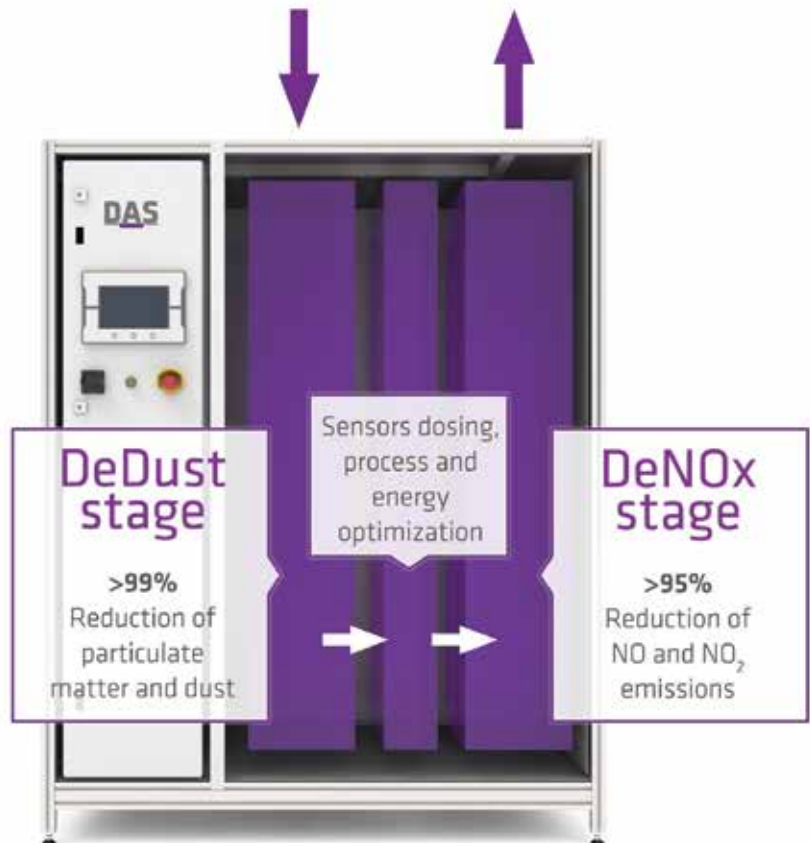
Environmental Experts.

ELIMINATING NOX IN THE SEMICONDUCTOR INDUSTRY

Want to know more?

Get in touch with the
DAS Environmental Experts
at SESA 44th Annual
Symposium

Monday, April 4 - Thursday, April 7, 2022



DAS Environmental Expert GmbH

Preston Nance | Key Accounter Manager
800 E Citation Ct.
Boise, ID 83716, USA

+1 844 862-1662
p.nance@das-ee.com
www.das-ee.com



**Culture
matters.**

**Working for
purpose
matters.**

Join us!

Stop by booth 29 for
more information

bsi.

bsigroup.com/en-US/

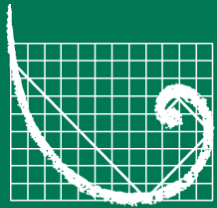
Interested in working to
improve people's lives and
protect the health and safety of
our planet? Visit our Careers page
for opportunities in areas including:

- Environmental
 - Health, Safety, and Well-being
 - Industrial Hygiene
 - Sustainability
 - Supply Chain Security
 - Digital Trust
 - Sales
- ...and more!



sustainability
through
collaboration

 **EDWARDS**



ERM



At ERM, ***sustainability is our business.***

As the largest global pure play sustainability consultancy, we partner with the world's leading organizations, creating innovative solutions to sustainability challenges and unlocking commercial opportunities that meet the needs of today while preserving opportunity for future generations.

Our clients face large, complex and volatile business challenges in every stage of their business: setting strategy, entering new markets, integrating acquisitions, planning and delivering capital projects, improving operational performance, or retiring assets. ERM services support our clients' environmental, health, safety (EHS) and sustainability needs across the entire lifecycle of the business.

Core Services

- Capital project delivery
- Climate change & corporate sustainability
- Digital services
- EHS management & compliance
- Liability portfolio management & remediation
- Low carbon economy transition
- Mergers & acquisitions
- Operational performance
- Product stewardship
- Safety services

Additional Services

- Battery sustainability
- Construction safety
- Data center and mission critical solutions
- Electronics auditing & resource recovery
- Social performance
- Strategic communications
- Stakeholder engagement
- Supply chain management

From strategic advice through effective on-the-ground implementation, ERM is uniquely positioned to help our clients across their entire value chain.

www.erm.com

Exhibitors & Exhibitor Floor Plan



View the latest floorplan and company profiles on your phone or tablet.

Scan the QR Code or visit sesha2022.expofp.com

Exhibit Hall Hours: *Chaparral Conference Center, Kiva I-Paloma III*

Tuesday, April 5..... 10:00 am-7:00 pm

Break.....10:15 am-10:45 am

Lunch & Raffle Ticket Distribution 11:30 am-1:00 pm

Break & Raffle Ticket Distribution 3:00 pm-3:30 pm

Opening Reception & Raffle Ticket Distribution/Drawing 5:00 pm-7:00 pm

Wednesday, April 6 9:00 am-4:00 pm

Break & Raffle Ticket Distribution9:30 am-10:00 am

Lunch & Raffle Ticket Distribution/Drawing 11:30 am-1:00 pm

Break & Raffle Ticket Distribution/Drawing..... 3:00 pm-3:30 pm

Thank you for Sponsoring!

<p>Lunch</p> <p>Centrotherm DOD Technologies</p> <p>Breaks</p> <p>Centrotherm CS Clean Solutions DOD Technologies Edwards</p> <p>Lanyards</p> <p>DOD Technologies</p> <p>Tote Bags</p> <p>ASM</p>	<p>Notebooks</p> <p>DOD Technologies</p> <p>Beverage Bottles</p> <p>Edwards</p> <p>Pens</p> <p>Centrotherm</p> <p>5K T-shirts</p> <p>ASM Airgard BSI Ebara Salus Spectrum Environmental Solutions</p>
---	---

Exhibit Hall Raffle

We will be holding a raffle with some very nice prizes in the Exhibit Hall on Tuesday and Wednesday. Starting Tuesday you will be able to get tickets at each exhibit booth in exchange for a business card.

You must be present to win.

Learn more about how your organization can support SESH A and the education and professional development of our members at sesha.org.

Exhibitors

ACTenviro

Booth: 20

967 Mabury Road
San Jose, CA 95133
www.actenviro.com
866-333-9222

Founded in 2000 and built on the quality and investment of our people, equipment, permitted facilities, and cutting-edge technology, ACTenviro is a nationally recognized environmental and hazardous waste management firm and one of the top 100 recyclers in the United States. We serve more than 2,500 clients, ranging from federal, state, local and municipal agencies to multinational Fortune 100 firms.

Alliance Source Testing

Booth: 28

255 Grant St. SE Suite 600
Decatur, AL 35601
alliancetechnicalgroup.com

Alliance is the leading provider of source testing, emissions monitoring, and analytical services to customers throughout the United States.

Assent

Booth: 25

www.assent.com
866-964-6931

Assent is the supply chain sustainability management solution for the world's most responsible, sustainability-focused complex manufacturers. We go deeper than suppliers to their products, and even substances within parts, to map the entire complex manufacturing genome. Shaped by regulatory experts, customers, and suppliers, Assent is the foundation manufacturers need for cross-enterprise sustainability. Learn more at www.assent.com.

Banda Group International, LLC

Booth: 35

Bronze Sponsor

1219 South McClintock Rd
Tempe, AZ 85281
bandagroupintl.com
480-636-8734

For nearly two decades, Banda Group International, LLC (BGI) has been a key technical support service provider of Environmental, Health, and Safety (EHS) programs and management and other support functions for semiconductor manufacturing companies domestically and internationally. BGI conducts independent EHS audits, provides safety training and coaching, and develops safety programs and cultures. Our EHS personnel integrate seamlessly into the client's team providing field safety support, supervision of construction personnel, safety representation for project related meetings, and safety oversight for outsourced service providers. In addition to outstanding EHS support, BGI provides construction management and quality assurance, 24/7 security services, medical services, facilities management, carpentry, and logistics support. Our onsite semiconductor support team includes bilingual trainers, security officers, administrative assistants, field laborers, carpenters, site coordinators, safety professionals, and contracted medics/EMTs.

BELFOR USA

Booth: 36

Bronze Sponsor

2425 Blue Smoke Court South
Fort Worth, TX 76105
www.belforusa.com
817-535-6793

BELFOR USA Technical Services Group provides semiconductor tool and fab decontamination services on a global basis. BELFOR Environmental Services provides semiconductor fab decontamination and full fab decommissioning projects worldwide.

BELFOR USA Group is the World's largest fire, flood and natural disaster restoration provider.

BSI America Professional Services Inc

Booth: 29

4150 Drinkwater Blvd.
Scottsdale, AZ 85251
www.bsigroup.com
480-577-3566

Cobalt Sponsor

BSI provides a comprehensive range of strategic, management and technical consulting solutions, partnering with clients to achieve their environmental, health, safety and sustainability goals.

Centrotherm

Booth: 18

216-E Mt. Hermon Rd. Suite 107
Scotts Valley, CA 95066
www.centrotherm-cs.de/en/
831-601-3000

Silver Sponsor

Centrotherm Clean Solutions is a leading global supplier of equipment and technology for the treatment of gaseous, liquid, and solid pollutants with the goal to protect the environmental health and safety of others. Customer satisfaction is the most important benchmark for us. We successfully treat the most difficult abatement processes worldwide. With more than 60 years of providing our customers with sustainable exhaust gas solutions, new abatement challenges are a welcome opportunity. From large volume VOC treatment to PoU treatment for Semiconductor, PV, FPD, LED and R&D, we have the perfect solution. Engineered and manufactured in Germany with support locations worldwide.

CleanAir Engineering

Booth: 21

13720 24th Street East
Units 102 and 109, Building E
Sumner, WA 98390
www.cleanair.com
800-553-5511

Since 1972 CleanAir is a global provider of technical products and services for sustainability and resource management. We specialize in emissions reduction, energy management, common sense and a lot more. Learn more at cleanair.com

CS CLEAN SOLUTIONS Inc

Booth: 31

26 Commerce Drive
Danbury, CT 06810
www.csclean-usa.com
203-797-8155

Bronze Sponsor

CS CLEAN SOLUTIONS® is the global leader in dry-bed abatement systems for hazardous gas streams using passive, chemisorption-based technology to treat gas streams to outlet levels below TLV. Using proprietary granulate formulations, the systems operate at ambient temperature to abate toxic, corrosive and pyrophoric chemistries.

Dakota Software

Booth: 10

1375 Euclid Avenue
Cleveland, OH 44115
www.dakotasoft.com
216-765-7100

Dakota Software's ProActivity Suite helps organizations ensure EHS compliance by centralizing their regulatory obligations & managing related tasks, issues, and documents. It features a constantly updated regulatory library that guides users in the creation of facility-specific compliance calendars and ensures that audit protocols are always up-to-date.

DAS

Booth: 13

800 E. Citation Ct.
Boise, Idaho 83716
www.das-ee.com/en-us
844-862-1662

Bronze Sponsor

PURPLE INNOVATIONS FOR GREEN MANUFACTURING

With innovative technologies for waste gas and water treatment the DAS Environmental Expert create balance between industrial growth and the preservation of natural resources. Since 1991 DAS Environmental Experts has developed and produced client-specific point-of-use facilities for waste gas treatment in the global high-tech industries. This is how we support the technological development of our society and, at the same time, protect people and the environment. Abatement Concepts for Waste Gas Treatment.

The treatment of industrial waste gases serves the protection of people and the environment as well as the stability of the production process. DAS EE has dedicated itself to this task more than 30 years ago. Our abatement concepts are always customized and manufactured according to high industrial standards in Germany. Our worldwide service teams professionally support all systems installed. Due to our in-house R&D capacities at our Headquarters in Dresden/Germany as well as in the innovation centers in Taiwan and the USA, we cooperate closely with our customers and adopt quickly to innovation cycles.

DOD Technologies, Inc.

675 Industrial Blvd, Bldg. A
Cary, IL 60013
DODtec.com
815-788-5200

Booth: 32

Gold Sponsor

DOD Technologies is the leading global supplier of industrial low-level gas detection systems and solutions. Our innovative products are engineered and designed to the highest safety standards. These state-of-the-art technologies are essential in keeping employees and workplaces safe from explosions, fire, suffocation, and injuries related to the inhalation of toxins.

Ebara Technologies, Inc.

51 Main Ave
Sacramento, CA 95838
www.ebaratech.com
800-535-5376

Booth: 4

Bronze Sponsor

EBARA is an innovative global provider of vacuum pumps and advanced exhaust management solutions. An extensive global service network backs EBARA's superior products. Continually expanding its product portfolio of Dry Vacuum, Turbomolecular Pumps, Point-of-Use Abatement, Line Heaters and Parts Cleaning into semiconductor, photovoltaic, thin films and R&D industries.

EcoSys Abatement

7380 W. Sand Lake Road
Orlando, FL 32819
ecosysabatement.com
408-477-0706

Booth: 7

Bronze Sponsor

EcoSys Abatement is a world leading supplier of best-in-class process exhaust gas abatement solutions. Our line of scrubbers include the brands CDO, Guardian, Marathon & Vector that set the standard for equipment performance and reliability. An experienced, talented team and singular focus make us the right partner for your manufacturing.

Edwards

6220 NE Century Blvd
Hillsboro, OR 97124
edwardsvacuum.com
503-710-1077

Booth: 37

Platinum Sponsor

Edwards is a global leader of vacuum and abatement. We are proud to lead the industry, pushing the boundaries of science to deliver innovative products which are intrinsic to everyday life, working in partnership with our customers and continually setting new standards.

Gasmet Technologies Inc.

5865 McLaughlin Road, Unit 1
Mississauga, ON L5R 1B8, Canada
www.gasmet.com
360-220-1025

Booth: 22

Gasmet Technologies provides solutions for demanding gas monitoring to the semiconductor industry. Applications include emissions monitoring, process gas analysis, research, emergency response and industrial hygiene. Gasmet™ FTIR gas analyzers can simultaneously measure organic and inorganic gases in hot, wet and corrosive gas streams within seconds. Measurement capabilities range from sub-ppm's up to percent levels. Gasmet manufactures portable, rack-mounted analyzers and fully turn-key multi-gas & multi-stream monitoring systems.

Highvac Corp.

4710 N Chestnut Street
Colorado Springs, CO 80907
www.highvacgroup.com
719-260-1185

Booth: 24

Established in 1993, HIGHVAC is a leading supplier of vacuum and abatement solutions to the semiconductor industry. Having introduced our EcoGuard™ burn/wet abatement systems in 2010, and our NEW patented SGS series - specifically designed for multi-chamber tools featuring total separation of deposition and clean gases throughout the abatement process.

Honeywell

855 S Mint Street
Charlotte, NC 28202
sps.honeywell.com

Booth: 15

Silver Sponsor

Honeywell Gas Analysis and Safety Helping You Meet The Safety Needs of Today and Tomorrow. Featuring the broadest range of portable and fixed gas and flame detection solutions for use across many industries and applications, Honeywell is the global leader in gas detection. For nearly 50 years, companies have trusted Honeywell to help keep their workers and sites safer and more productive. Today, we continue to build on that legacy with innovative hardware, software and service solutions to help customers meet their safety and compliance needs. Talk to the experts in gas detection to learn how we help you to keep your workers and site safe and productive.

ISN

3232 McKinney Ave
Dallas, TX 75204
www.isnetworld.com/en
310-698-8732

ISN is the global leader in contractor and supplier information management for 650+ Clients, including many Fortune 500. ISN's platform, ISNetworld®, serves as a world-class forum for sharing industry best practices, benchmarking performance, and data insights among its members. Please stop by booth #33 to learn more.

Booth: 33

KFPI

10351 Olympic Drive
Dallas, TX 75220
kfpi.com
214-358-3593

KFPI is a premier semiconductor company specializing in fire and gas safety solutions. KFPI provides fire and gas safety systems including consulting, design, product, installation, integration, certification, training, service, and support. KFPI specializes in performance-based solutions with focus on reliability, uptime, chemical compatibility, and longevity. In addition, KFPI offers compliance guarantees with SEMI S2, FM, & NFPA. KFPI recommends and provides the best gas detection technologies to protect your personnel and operations against hazardous chemical leaks. KFPI developed LCAS - the first and only complete automatic fire safety prevention system for bulk delivery cabinets using pyrophoric chemistries. LCAS safely contains and abates any size leak without fire, particle exposure, or damage to the fab.

KFPI is a global leader with offices throughout the USA, Taiwan, Japan, China, Korea, Singapore, & Europe.

Booth: 9

Platinum Sponsor

Micropack Detection (Americas) Inc.

1227 Lakecrest Court
Fort Collins, CO 80526
micropackfireandgas.com
970-980-3642

Line of advanced optical flame detection for the semiconductor industry which includes listings and approvals to detect Silane gas and other gases and solvents. Intelligent video imaging detectors also provide real time surveillance of the areas being protected to compliment existing security systems.

Booth: 2

Montrose Environmental Group

5120 Northshore Dr.
North Little Rock, AR 72118
www.montrose-env.com
501-900-6400

Montrose Environmental supports commercial and government organizations with innovative and practical solutions within areas of air quality, regulatory compliance, emergency response, permitting, engineering and remediation.

Booth: 3

Red-on-line

55 Broad Street, 22nd Floor
New York, NY 10004
www.red-on-line.com
646-736-1888

Your Global EHS Compliance Partner, with local implementation Red-on-line can help you manage local regulations on a global scale. Covering expert software, content, and consulting services to help you solve your global EHS challenges. We deliver site-specific regulatory content in multiple languages to reduce compliance risks and improve efficiency.

Booth: 6

Salus Engineering

3004 Scott Blvd
Santa Clara, CA 95054
www.salusengineering.com
408-235-8831

Salus Engineering International provides the highest quality equipment safety services and aid to equipment manufacturers in satisfying the environmental health and safety requirements of this marketplace. In addition to SEMI S2 and related supporting standards, the experienced Salus team provides the complete breadth of services to meet the safety needs of the high tech and semiconductor industry. Our experienced staff of professionals includes electrical & mechanical professional engineers, certified industrial hygienists, environmentalists, ergonomists and ventilation specialists.

Booth: 34

Bronze Sponsor

Spectrum Environmental Solutions

2340 W Braker Lane Suite A
Austin, TX 78758
www.spectrumenvsoln.com
713-253-2743

Spectrum Environmental Solutions, LLC is a technology leader in optical analytical techniques. We provide customized solutions using Fourier Transform Infrared (FTIR) spectroscopy, ultraviolet (UV), tunable diode laser (TDL), and quantum cascade laser (QCL) devices. Optical measurements provide dynamic, near real-time insight into plant operations, fence line monitoring, and flare characterization utilizing both open path and extractive configurations.

Booth: 26

Bronze Sponsor

UE Precision Sensors

340 Woodmont Road
Milford, CT 06460
www.precisionensors.com
415-517-5229

UE Precision Sensors has over 35 years experience designing and manufacturing electromechanical and solid state pressure, vacuum, flow, liquid level and temperature sensors for OEM's and Fabs in the semiconductor industry. PSI uses proven design concepts that meet the safety and performance needed in critical processes. Additional third party safety ratings including UL, CE, ATEX, ISO 13849 and SIL 3.

Booth: 23

Bronze Sponsor

SUEZ Water Technologies & Solutions

3239 Dundas St. West
Oakville, ON L6M 4B2, Canada
www.suezwatertechnologies.com
602-618-6111

SUEZ Water Technologies & Solutions supports the semiconductor industry in achieving their efficiency, sustainability and environmental goals by providing UPW, utilities and wastewater treatment solutions. High quality production in fabs around the world benefit from our industry and application expertise, combined with our technology portfolio, chemistry and monitoring capabilities.

Booth: 11

Bronze Sponsor

WorkWell Prevention & Care Booth: 30

306 W Michigan Street, Suite 301
Duluth, MN 55802
www.workwell.com
866-997-9675

WorkWell helps organizations prevent and treat sprains, strains, and back pain by delivering comprehensive and scalable musculoskeletal health programs. We partner with employers to keep employees safe, healthy, and productive by identifying workplace risks, implementing early intervention and proactive ergonomics, providing employee testing and treatment, and ensuring safety compliance.

Professional Development Courses

Monday, April 4

All Sessions take place in the Chaparral Conference Center

PDC #1 – Silane/Disilane Safety

Eugene Ngai

1:00 pm-5:00 pm

Mohave I

A wide variety of flammable silicon compounds are used in the Semiconductor Device Fabrication industry. The most common are the Silicon Hydrides (silane, disilane, trisilane). The higher molecular weight silicon hydrides such as disilane and trisilane are finding increasing use since they can be dissociated at much lower reactor temperatures than silane. Increasing the number of Si-Si bonds increases flammability and reactivity. As a result, disilane (Si-Si) is more flammable than silane, while trisilane (Si-Si-Si) is more flammable than disilane. Silane has a reported LFL of 1.37% while disilane has a reported value of 0.1% or even less depending on the report.

This ½ day PDC will present findings of a joint research project between Chemically Speaking LLC and National Kaohsiung University of Science and Technology (NKUST) to characterize the behavior of disilane under various user conditions using funding by Edwards Vacuum LLC and NKUST. Unlike silane, very little research has been done on disilane. All existing work were conducted under laboratory conditions rather than real world conditions.

Comprehensive testing were carried out to determine LFL, pyrophoric limit, limiting O₂ concentration, extinction velocity, and reaction overpressure, etc. These results were then used to develop test conditions in metal tubes simulating vacuum exhaust systems where air was introduced into the system at various disilane concentrations. The final phase of the testing was in a 2-meter long clear plexiglass tube to visually observe the reaction using a high speed video camera.

The results of this testing will dramatically improve the safety of disilane use.

PDC #1 – Nanoparticles in occupational environment: Insights for detection, modeling, and risk assessment

Andrey Korchevskiy, Daniel Hall, Matthew Hull, Cary Hill; Chemistry & Industrial Hygiene, Inc. (C&IH, Inc.), NanoSafe, Inc.

1:00 pm-5:00 pm

Mohave II

Toxicity of tiny particles became a matter of toxicological concern many decades ago. Small size of a particulates sometimes serves to decrease the inhalation hazard, because significant fraction of such particles would not be retained in the body for long time. However, the smallest particles can also penetrate deep and interact with the sensitive cellular structures. Sometimes, nanoparticles of the same chemical composition are considered much more toxic than their larger analogies. Nanoparticles are widely spread in occupational environments; however, the related industrial hygiene interventions are often limited because of the difficulties in recognizing the hazard, measuring the exposure concentrations, and assessing the risks. This issue is especially concerning for the technologically advanced industries, including semiconductor facilities where different types of nanoparticles and fibers can be expected as a part of workers' exposure.

This PDC will take participants for an intensive, half-a-day ride, exploring how to address the occupational health and industrial hygiene issues related to particles and fibers of extremely small size. The types of nanoparticles and their sources in semiconductor facilities will be identified and characterized.

We will discuss techniques and tools that may be deployed at the semiconductor facilities to assess exposures to nanoparticles in the workplace, from cost-effective personal exposure detectors to robust analytical suites capable of discerning great detail regarding nanoparticle size, concentration, and composition. It will be also demonstrated how air dispersion modeling, including computational fluid dynamics (CFD) software, can be used to assess

the exposure to nanoparticles from various types of equipment. The participants will be lead through examples showing how industrial hygienists and environmental professionals can use CFD to assess and prevent exposure to hazardous particulates.

At the end of this session, attendees will be equipped with basic knowledge and starting resources for determining nanoparticle exposure as well as avenues for guidance from experts. The audience will also learn how to evaluate toxicity of nanoparticles in the situations when occupational exposure limits are established only for certain types of the agents (like carbon nanotubes and titanium dioxide). The “scale of toxicity” approach will be introduced to help with exposure banding for the purposes of practically oriented and scientifically based risk assessment.

PDC #3 – S2 Breakdown!! - How to critically review the key sections of an S2 Report

Chris Evanston, John Visty; Salus Engineering

1:00 pm-5:00 pm

Mohave III

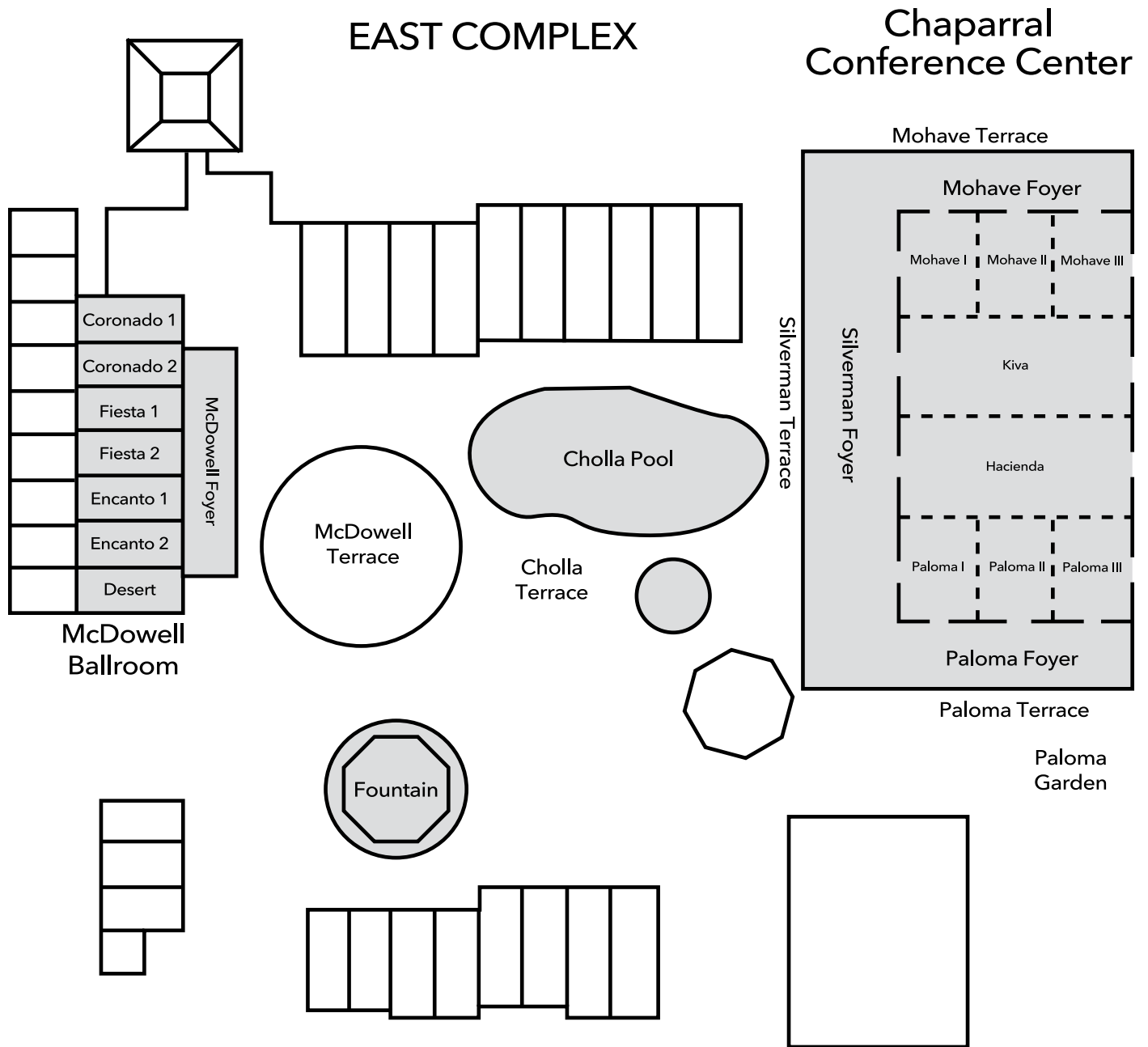
An S2 Report can be of great assistance in identifying and assessing various equipment hazards before and after the equipment is installed. Reading the entire report to gather as much information as possible can be very useful, however, initially focusing on key areas will provide an initial efficient assessment. This course is designed to identify the primary S2 sections (paragraphs) and supporting documentation from a SEMI S2 report that should be accessed by a reader in order to efficiently breakdown the most critical information. Breakdown of an S2 report will highlight information on electrical power, interlocks, chemical exposure, LOTO, exhaust, etc. Focusing on the critical information sections will allow the reader to initially assess and qualify the equipment hazards for their installation and specific company use. The information extracted from the key sections will also provide the reader an opportunity to develop an impression as to the quality of information in the report and what additional information should be provided from the supplier.

Notes

SESHA

950 Herndon Parkway, Suite 450
Herndon, Virginia 20170
703.790.1745 • Fax: 703.790.2672
SESHA@BurkInc.com
www.seshaonline.org

Embassy Suites by Hilton Scottsdale Resort Floorplan





DOD Technologies

The Leader in Low Level Gas Detection



At DOD Technologies, low-level gas detection is all that we do! We supply the semiconductor industry with technologically advanced, gas detection systems that help keep employees safe and operations efficient. We also offer world-class technical service including:

- Routine Maintenance Plans
- Gas Detector Repair / Calibration
- Training Services
- Product Trade-In Discounts
- Product Loaner Program (Short-Term)



Contact us today and visit us at the SSHA Symposium, Booth #32.



815-788-5200

DODtec.com



solutions@dodtec.com



STRONGER TOGETHER!

EHS AND PRODUCT
SAFETY STRONGER
TOGETHER TO ACHIEVE
OUR VISION OF:
ZERO HARM!