

American Glovebox Society

Standards Development Committee Activities for 2009-2010

Presented
by

Arthur A. Frigo, P.E.
Argonne National Laboratory
for the
Standards Development Committee

24th Annual Conference & Exposition
of the American Glovebox Society
Orlando, FL
July 13, 2010

 American Glovebox Society
2010 Annual Conference

AGS-SDC Activities
2009-2010

Activities Since the Last Conference

- Held Two SDC meetings
 - October 2009, Charleston, SC
 - March 2010, Aurora, CO
- Continued Work on Four Standards of Practice
- Completed Committee Work on one Standards of Practice
- Continued Work on a Recommended Practice
- Nearing Completion of One Reference Specification (needs editing)

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2010 Annual Conference

AGS-SDC Activities
2009-2010

Activities Since the Last Conference

■ Concentrated Efforts on Four Standards of Practice

- Glovebox Fire Protection, AGS-G010
 - Committee Work Complete, Document in Final Editing
- Leak Test Methodologies for Enclosures, AGS-G004
 - Committee Work Nearing Completion, Putting Final Touches on Document

Activities Since the Last Conference

■ Concentrated Efforts on Four Standards of Practice

- *Glovebox Ergonomics, AGS-G013*
 - *Committee Work Complete, Final Reviews and Editing Underway*
- *Glovebox Ancillary Systems/Components, AGS-G012*
 - *Committee Work Underway, Need Writers*

Activities Since the Last Conference

- Completed Revision to One Standard of Practice
 - **Standard of Practice for Glovebox Gloves, AGS-G005-1998**
 - Committee Work Complete, Final Editing Underway

Current SDC Members

- A Total of 65 Members Contributed During the Past Year
- Since the 2009 Conference:
- Seven people have joined the SDC
 - Three people have rejoined the SDC
 - Five people left the SDC due to retirements, job changes, etc.

Some Members at Premier Technology in 2007



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2009-2010

Current SDC Members

- **Med Allen – Savannah River National Laboratory**
- **Lynn Aurelius – Piercan USA**
- **Ken Bentley – Energy Solutions**
- **Karen Bills – B&W Y-12**
- **Angela Bowser – Savannah River National Laboratory**
- **Dorothy Calagari – AGS Society Office**
- **Steve Chunglo – Latex Technology, Inc.**
- **Miles Close – Central Research Laboratories**
- **Stephane Collonge – Robatel Technologies**
- **Paul Contreras – Los Alamos National Laboratory**
- **Michael Cournoyer – Los Alamos National Laboratory**
- **Justin Dexter - Merrick & Co.**
- **Ike Dimayuga - AECL**

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Current SDC Members

- William Eleazer - North Safety Products
- Carl Fink - CTL Corp.
- Lyle Freeman - Premier Technology
- Art Frigo - Argonne National Laboratory
- Sal Golfo – Germfree Labs
- Eric Gosswiller – Idaho National Laboratory
- Eric Greenwood – Sellafield Works
- Teo Grochowski – Robatel Technologies
- Betsy Grom – Argonne National Laboratory
- Scott Gustafson – Merrick & Co.
- Bill Haddock – Doerfer Wright Industries
- Ronnie Harris – Integrated Containment Systems, LLC

Current SDC Members

- Tony Heinz – Leak Test Specialists
- Scott Hinds – Merrick & Co.
- James Hines - Isolutions
- Ted Hutton – AtoFina
- Craig Johnson - Walker Barrier Systems
- Mike Johnson – North-Honeywell
- Starr Johnson – Los Alamos National Laboratory
- Dennis Johnston – Premier Technology
- Kathy Klapper – Savannah River National Laboratory
- Andy Lautner – Merrick & Co.
- Cindy Lawton – Los Alamos National Laboratory
- Nate Levene - Merrick & Co
- William Matthews – Vacuum Atmospheres

Current SDC Members

- Steve McCloughan – Argonne National Laboratory
- Ashley Meklis – University of Notre Dame
- Doug Minnema – DNFSB
- Jens Nesfingen – Central Research Laboratories
- John Newman – IP Systems
- Steve Odione – Douglas Electrical
- Martyn Page – AWE plc
- Janak Patel - Bechtel Savannah River, Inc.
- Anna Pointing –AWE plc
- Darren Quintana – Los Alamos National Laboratory
- Hank Rahe – Containment Technologies Group, Inc.
- Neil Randles – Sellafield Works

Current SDC Members

- Kenneth Rensberger – IP Systems
- Fred Schmitz - EnviroChem Consulting
- Andrew Sharpe – Energy Solutions
- Dean Shipley – B&W Y-12
- Rodney Smith – B&W Y-12
- Ron Smith – (retired)
- Andy Souders – Oak Ridge National Laboratory
- Steve Swanson - Vista Engineering Technologies, Inc.
- Bernie Till – Washington Savannah River
- Doug Vandergrift – Oak Ridge National Laboratory

Current SDC Members

- Rodney Walker – B&W Y-12
- Brian Ward – Eli Lilly & Co.
- Patrick Westover - Savannah River National Laboratory
- Craig Worthen - M Braun
- David Yew – Sellafield Works

Activities Since the Last Conference

- Continued Collaboration with United Kingdom Nuclear Glovebox Forum
- Although not funded to attend the SDC meetings this past year, several members of the UK Nuclear Glovebox Forum remain members of the SDC

How the AGS Technical Publications Fit Together

| Document Title and Number | Design | Specification | Procurement | Fabrication | Testing | Quality | Training | Operation |
|--|--------|---------------|-------------|-------------|---------|---------|----------|-----------|
| Guideline for Gloveboxes - G001 | X | X | X | X | X | X | X | X |
| Standard of Practice for the Design and Fabrication of Gloveboxes - G002 | X | | | | | | | |
| Standard of Practice for the Application of Linings to Gloveboxes - G003 | X | X | X | X | | X | | |
| Standard of Practice for Leak Test Methodologies for Enclosures - G004 | X | X | | | X | X | | |
| Standard of Practice for the Specifications of Gloves for Gloveboxes - G005 | | X | | | | | | |
| Standard of Practice for the Design and Fabrication of Nuclear-Application Gloveboxes - G006 | X | X | X | X | X | X | X | |

Yellow highlighted document titles are published documents



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How the AGS Technical Publications Fit Together

| Document Title and Number | Design | Specification | Procurement | Fabrication | Testing | Quality | Training | Operation |
|---|--------|---------------|-------------|-------------|---------|---------|----------|-----------|
| Standard of Practice for Glovebox Classification - G007 | X | | | | | | | X |
| Standard of Practice for Glovebox Fire Protection - G010 | X | | | | | | | |
| Specifications for Fabrication of Fiberglass-Reinforced Plastic Hood and Gloveboxes - G011 | X | X | X | X | | X | | |
| Standard of Practice for Glovebox Ancillary Systems and Components - G012 | X | X | X | X | X | X | | X |
| Standard of Practice for Glovebox Ergonomics - G013 | X | | | | | | X | X |
| Recommended Practice for Personnel Qualification and Certification in Glovebox/Isolator Operations - G014 | | | | | | | X | |



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American Glovebox Society
Standard of Practice AGS-G010-2010

Standard of Practice
for
Glovebox Fire Protection

Fred Schmitz - EnviroChem Consulting
Lead for AGS Glovebox Fire Protection Subcommittee

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Approach

- Develop a methodology for performance-based evaluation.
- Include matrices, in the appendix for guidance in choosing which type of suppression system should be used for each individual case.
- Includes historical information on glovebox fire events since 1950s

Status

- Significant progress made during the Fall 2008 meeting
- Distributed for comments to stakeholders outside the AGS
 - DOE/NNSA
 - DNFSB
 - NFPA 801 Members

Status

- Reviewed with full SDC during Spring 2009 meeting
- 99% complete
- Undergoing final editing for publication this summer
- Have endorsement of key DOE, DNFSB, and NFPA parties

American Glovebox Society
Standard of Practice AGS-G004-201x

**Standard of Practice
for
Leak Test Methodologies for Enclosures**

Craig Johnson - Walker Stainless
Lead for AGS Glovebox Leak Testing Subcommittee

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What We Completed in 2009-2010

- All sections are essentially complete
- Need to fill some gaps in various sections
- Expect to spend significant time at Fall 2010 and Spring 2011 meetings reviewing with entire SDC

Table of Contents

- Section 1: Scope, Limitations, Purpose**
- Section 2: Supporting Documents**
- Section 3: Terms and Definitions**
- Section 4: Leak Tests**
- Section 5: Leak Test Locations**
- Section 6: Glovebox Systems Accumulative Leak Tests**
- Section 7: Transfer System Leak Tests**
- Section 8: Selection of Glovebox Leak Tests**
- Section 9: References**

Other Reviews / Steps

- Special review by Level IIIs
- Full up review by SDC
- Technical editing
- Final AGS SDC review
- Publish!

American Glovebox Society
Standard of Practice AGS-G013-201x

**Guideline
for
Glovebox Ergonomics**

**Cindy M. Lawton, P.T. - Los Alamos National Laboratory
and
Arthur A. Frigo, P.E. - Argonne National Laboratory**

Co-leads for AGS Glovebox Ergonomics Subcommittee

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Purpose

- This document addresses the ergonomics of glovebox design and operation
- It will provide recommendations for designers, glovebox users, and facility operators

Purpose



Outline

- Introduction/Background/Anthropometric
- Pre-Design Analysis
- Ergonomic Design Considerations
- Verification Methods to Confirm that Ergonomic Considerations Were Addressed
- Gloves and Sleeves
- Operator Biomechanical Considerations
- Operational Conditions

Status

- The document has been completed in final draft format
- Full SDC Committee review is in progress
- Issuance is expected in 2011

➤ **Contact Art Frigo or Cindy Lawton for further information**

American Glovebox Society Standard of Practice AGS-G012-201x

Standard of Practice for Glovebox Ancillary Systems and Components

**Med Allen - Savannah River National Laboratory
Lead for AGS Glovebox Ancillary Systems and Components
Subcommittee**

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Purpose

This document provides a Standard of Practice for the overall pressure boundary of the glovebox system. It is needed because design or operational deficiencies associated with ancillary system/components impacts the glovebox's containment and operational integrity as much as the actual glovebox shell.

OUTLINE

- **Shell Penetration Requirements – Piping, Electrical, Mechanical**
- **Ancillary Systems/Components**
 - Vacuum Pumps – Internal/External
 - Process Equipment Interfaces – Fluid, Instrumentation
 - Transfer Devices
 - Filter Requirements – Radial, Spinchter, Testing
 - Inert Gas System,Regeneration Beds,Blower, Instrumentation
 - Closed Loop Cooling Systems
 - Glovebox Pressure Boundary Instrumentation
- **Under/Over Pressurization Devices**
 - Passive Devices
 - Active Devices
- **Glovebox Window Specification & Fabrication**

Status

- Scope, Purpose and Limitations defined
- Developed a base outline of SOP Sections
- Actively Reviewing:
 - Inert Gas Glovebox Systems
 - Transfer Devices
 - Shell Penetration Requirements
 - Window Glass Specification

Status

- Has essentially been on hold this year due to focus on other documents, but should see increased emphasis next year.

**Excellent opportunity to contribute
to your Society!**

Need: People with experience willing to write sections

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Recommended Practice AGS-G014-201x

**Recommended Practice
for
Personnel Qualification & Certification in
Glovebox/Isolator Operations**

**Mark Borland - Idaho National Laboratory
Lead for AGS Personnel Qualification & Certification in
Glovebox/Isolator Operations Subcommittee**

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Purpose

- Previous standards and guidelines have addressed the design and fabrication of hardware.
- This document addresses the Operation of gloveboxes.

Scope

This document establishes the minimum requirements and considerations for the establishment of a qualification and certification program.

- Applies to personnel working with all forms of containments including gloveboxes, isolators, barriers, mini environments, and other forms of containment that protect personnel or product or both from exposure to the other.

OUTLINE

- **Levels of Qualification**
 - **Level I** – perform glovebox tasks according to written instruction
 - **Level II** – inspect and maintain the glovebox confinement
 - **Level III** – develop, qualify, and approve procedures, interpret requirements and apply regulations
- **Employer Certification Program**
- **Education, Training and Experience Requirements**
- **Examination**
- **Certification**
- **Review of Qualifications**

Status

- Scope, Purpose and Limitations defined
- Draft text for all sections
- Training content outlined – need descriptions
- Purpose and Scope have been peer reviewed
- Ready to start writing document
- Delayed efforts this year due to other document priorities

**Excellent opportunity to contribute
to your Society!**

Need people with experience willing to develop sections

Activities Since the Last Conference

- In 2006, completed periodic review of the Standard of Practice for the Application of Linings to Gloveboxes, AGS-G003-1998, but have postponed issuance until we determine if we will develop a new SOP for the Application of Coatings to Gloveboxes
– Lead: Ted Hutton of Atofina

Activities Since the Last Conference

- Postponed Work on the Standard of Practice for Glovebox Classification, AGS-G007-201X until other documents are completed or further along
 - Lead: Dean Shipley of B&W Y-12

Activities Since the Last Conference

- Nearly Completed One Reference Specification
 - Specifications for Fabrication of Fiberglass-Reinforced Plastic Hood and Gloveboxes, AGS-G011-2004:
 - Lead: Fred Schmitz of EnviroChem Consulting and Dean Shipley of B&W Y-12

Current Status Summary

- Four SOPs are currently under development – one ready to publish; two ready for final committee review
- One reference specification nearly complete
- One SOP revision complete and ready for final editing

Committee Meetings

So what does the Standards Development Committee do at the meetings?

We work hard...we congregate



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And we concentrate.....



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And we contemplate.....



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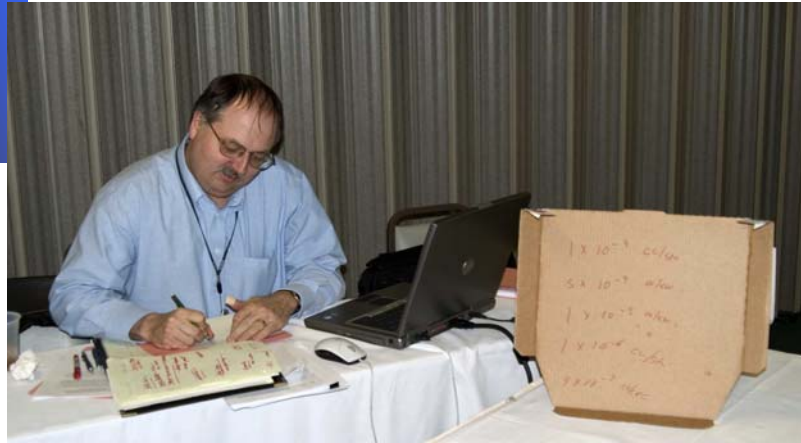
And we calculate.....



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*Not back-of-the-envelope.....
but back-of -the-pizza-box!*



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We tour.....



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We teach a little.....



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...and we celebrate!!



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On the road again.....



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Thanks to our hosts.....

Over the years, several companies have hosted our meetings, some multiple times, providing facilities and resources. The SDC would like to express our thanks and appreciation. This has saved the Society many dollars. Our hosts have included:

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Thanks to our hosts.....

- *Merrick & Co. – Aurora, CO*
- *Premier Technology, Inc. – Blackfoot, ID*
- *Wright Industries – Nashville, TN*

In 2005 the SDC adopted a motto:

*Why? Because we **are** the American Glovebox Society!*

Art Frigo Modeling T-Shirt with SDC Logo



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Future Activities of the SDC

Initiate 5-year Review of
*“Standard of Practice for the Design
and Fabrication of Glovebags”*
AGS-G002-1998

(Yes - we're late!!)

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Future Activities of the SDC

- *Need Volunteers in Various Capacities for All SOPs*
- *Meeting this Thursday*
 - *Working Meetings on the Leak-Testing and Ergonomics Documents*
- *All Invited - See a SDC Member for Details*

Future Activities of the SDC

- *Fall meeting (mid-October) will be held in the Wisconsin Dells, WI*
- *Meeting in Spring 2011 - location to be determined*

Ten Top Reasons for Being on the AGS SDC

- *Grammar Education*
- *Reduce Cost of Glovebox Operations*
- *Challenge Serving on the AGS SDC*
- *Stress*
- *Motivation for Retirees*



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Ten Top Reasons for Being on the AGS SDC (cont'd)

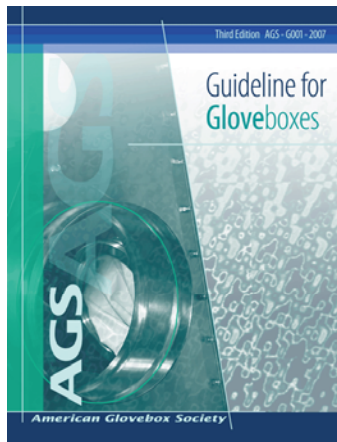
- *Free T-shirt*
- *Make New Friends/Establish Professional Relationships/Networking*
- *Produce Usable Standards*
- *Help Integrate New Technologies/Share Ideas/Learn from Others*
- *Venting*



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Crass Advertising - Get Your New Guideline Today!



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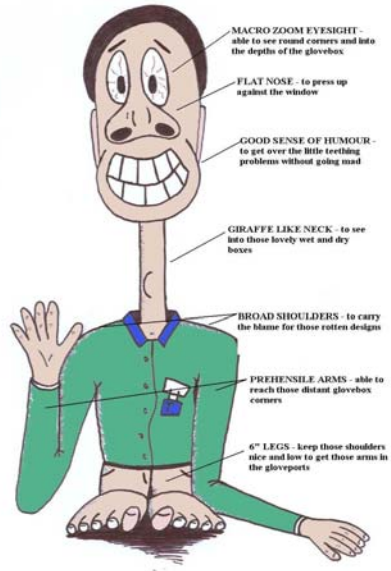
In Closing

- *This is Why We Develop Standards.....*

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The Ideal Glovebox Operator



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