

I am:

- a Master in Stained Glass Conservation with 20+ years professional experience in museums & on site.
- Health & Safety Chair and Board Member of SGAA
- Professional Associate of AIC
- A certified lead worker
- President & Principal Conservator of Nzilani Glass Conservation



Passionate about
Stained Glass
Preservation
and...
BEING SAFE while
doing it.





 Nzilani
glass conservation
EST. 2003



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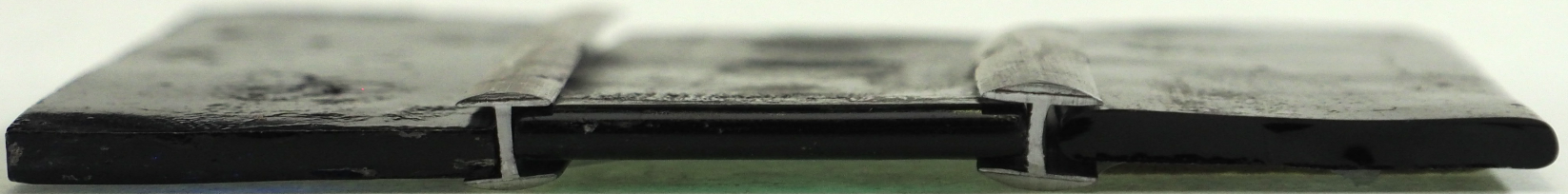
While I am Passionate about
Stained Glass Preservation
and...
BEING SAFE while doing it...



I am **not**:

- A Site Hygienist
- An OSHA Representative
- A Federal, State or Local Regulator
- Able to certify anyone as a lead worker.

Taking the Lead in Lead Safety: What is LEAD?



2019 Safety and Cultural Heritage Summit: Preserving Our Heritage and Protecting Our Health
presented by:

Potomac Section of the American Industrial Hygiene Association, Washington Conservation Guild, Smithsonian Institution's Office of Safety, Health and Environmental Management, Smithsonian National Collections Program, Smithsonian Lunder Conservation Center

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Lead is Bad Because:

- “Lead (is a metal that) is **cumulative toxicant** that affects multiple body systems and is particularly harmful to young children.
- Lead in the body is **distributed to the brain, liver, kidney and bones**. It is stored in the teeth and bones, where it accumulates over time. Human exposure is usually assessed through the measurement of lead in blood.
- **Lead in bone is released into blood during pregnancy** and becomes a source of exposure to the developing fetus.
- There is **no known level of lead exposure that is considered safe**.
- Lead exposure is preventable.”

World Health Organization: <http://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health>

Lead affects those working on & around the preservation of stained glass because:

- "Lead is a **cumulative toxicant** that affects multiple body systems and is particularly harmful to young children.
- Lead in the body is distributed to the brain, liver, kidney and bones. It is stored in the teeth and bones, where it accumulates over time.



World Health Organization: <http://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health>

Lead is Bad for our (future) kids because:

- “Lead in bone is released into blood during pregnancy and becomes a source of exposure to the developing fetus.
- Lead exposure also causes anemia, hypertension, renal impairment, immunotoxicity and toxicity to the reproductive organs.
- High lead levels in children have been ...associated with decreased intelligence in children, behavioral difficulties, and learning problems”



World Health Organization: <http://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health>

Lead - the Take Away:

- "There is *no known level* of lead exposure that is considered safe.
- Lead exposure IS preventable."



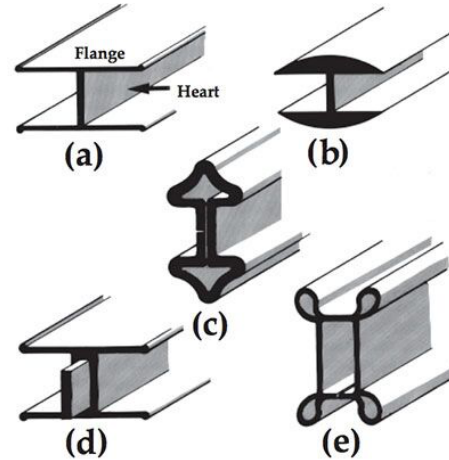
World Health Organization: <http://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health>

Why Still Use Lead?

It's still the **BEST** Material for art glass fabrication

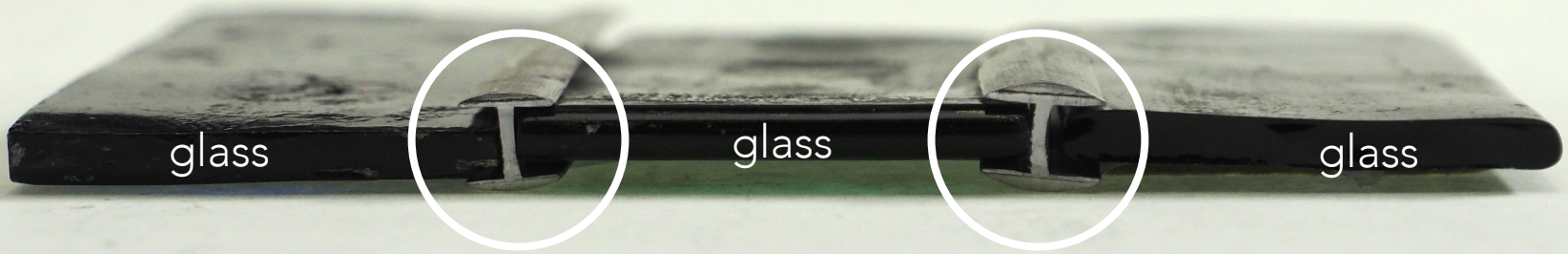
LEAD CHART - GC QUIRE - 2017 -> 2018

| | | | |
|----------------------|------------------------------|-----------------------|--------------------------------|
| 3/8 ↓ 15/32 | 3/8 ↓ 15/32 | 7/16 ↓ 15/32 | 15/32" OFFSET ↓ 15/32 |
| 15/32 ↓ 9/16 | 15/32 ↓ 9/16 | 1/2" HH ↓ 9/16 | 1/2" Double Heart ↓ 9/16 |
| 19/32 ↓ 5/8 | 19/32 ↓ 5/8 | 5/8" ↓ 5/8 | 5/8" OFFSET ↓ 5/8 |
| 3/4 ↓ 3/4 | 3/4 ↓ 3/4 | 3/4" ↓ 3/4 | 3/4" ↓ 3/4 |
| Large ↓ 1 3/16 | 27/32" OFFSET ↓ 1 3/16 | 1 3/16 ↓ 1 3/16 | 1 3/16 ↓ 1 3/16 |



...and it's historically accurate

Where is the LEAD?





glass

Where do you interact with LEAD?



comes

in all key window components...



paint & stain



putty

Define a Window.

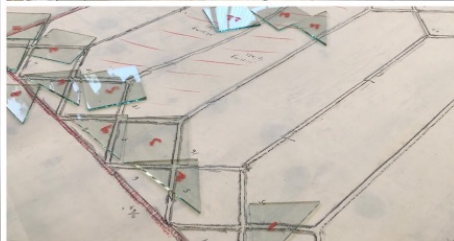
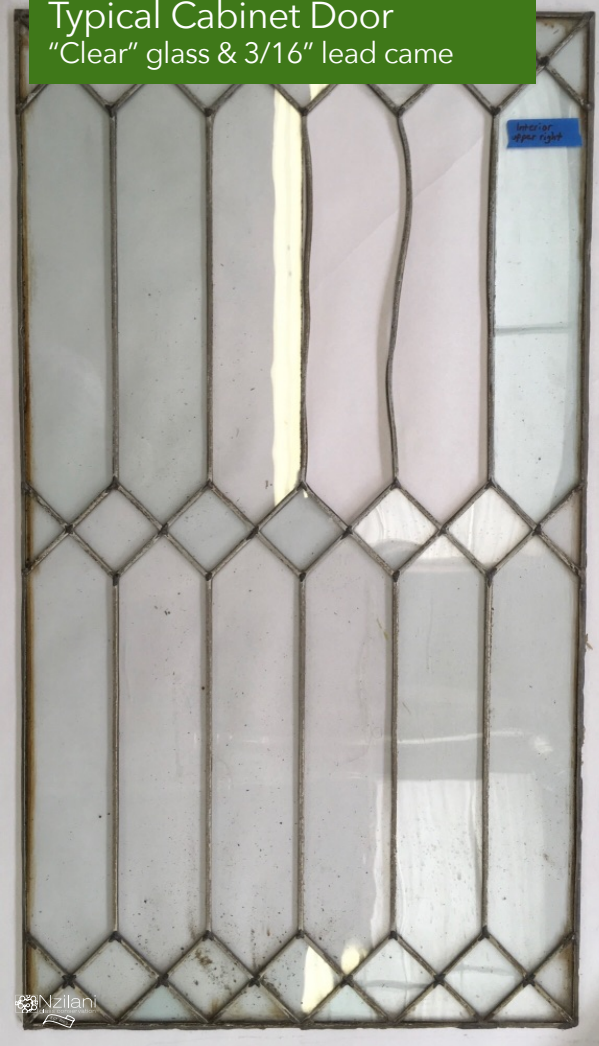
(It's harder than you think).

Where does our scope of work stop?

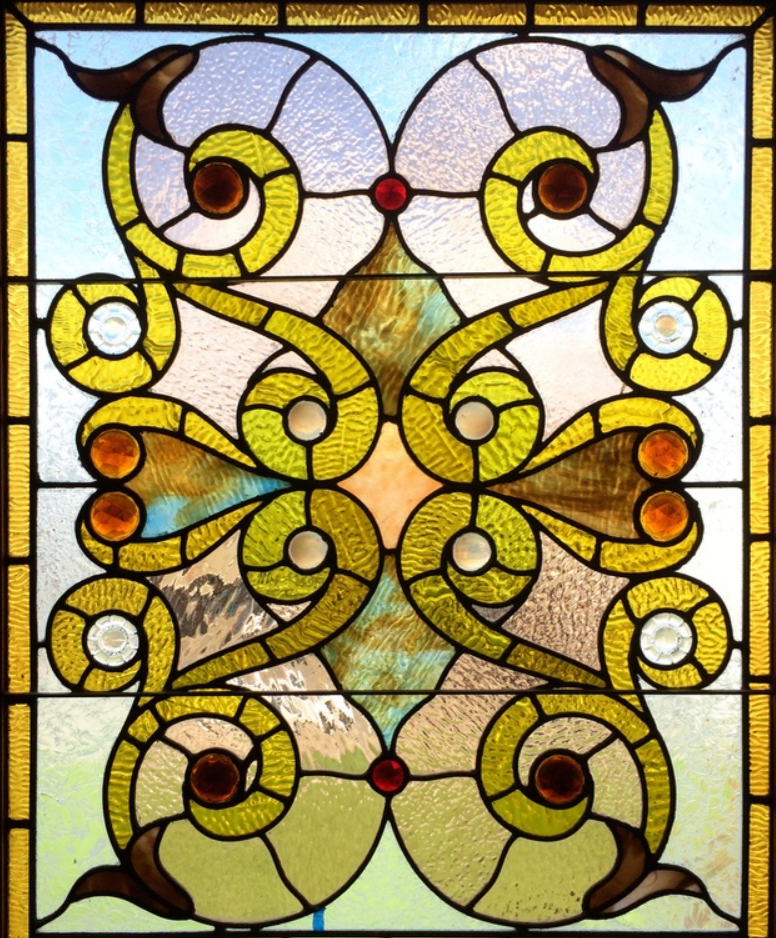
- Border stops | putty?
- The framework | sash?
- The entire wall including surrounding overhangs & roof?



Typical Cabinet Door
"Clear" glass & 3/16" lead came



Guest House Museum
Fort Bragg, CA



Grace Cathedral, SF
"New Testament", Window 41
"Old Testament", Window 34
Connick Studios, 1931 & 1932
- Each 1,500+ sq/ft

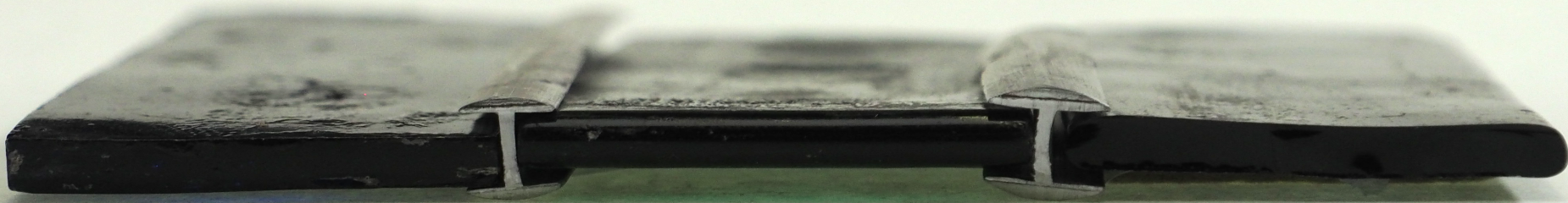
CONDITION | Unstable Areas Due to Age & Weathering

- Bowing Panels
- Cracks in glass & areas of loss
- Loose, rusty "T" & support bars

ACTION: Complete Restoration of all the windows, steel "T" and support bars, cement "stone set" repair and surface cleaning of the wall.



Section 2 | **TAKING THE LEAD,** IN LEAD SAFETY



Being in Compliance...
It's harder than you think.

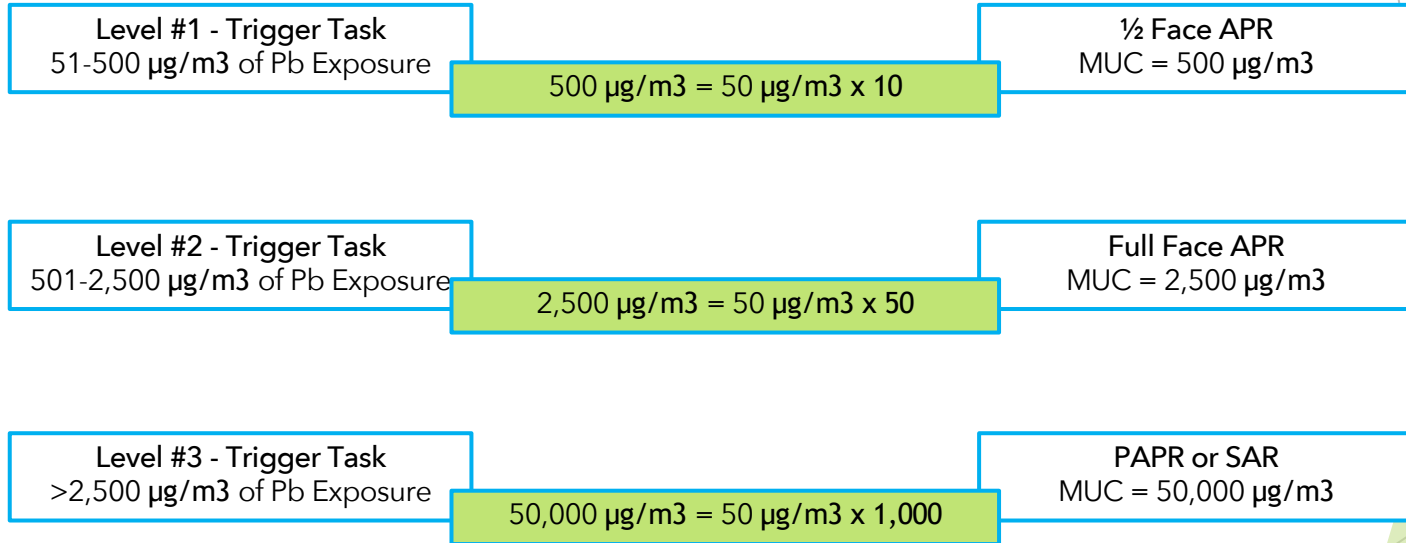
Be Safe. Have Fun. Do Excellent Work.



What's your "Trigger Task" Level?

Trigger Task

Minimum Respirator Needed



What's your "Trigger Task" Level?



What's your BLL (BLOOD LEAD LEVEL)?

- CDC & OSHA standards are*:
 - 5.0mg/dL or lower for the general population
 - 40.0mg/dL or lower for the lead worker (30.0mg/dL in Michigan)
 - There is no standard for stained glass, so we get lumped in as general "Lead Workers".



**Current regulatory levels as of 10.2019*

"Be Safe. Have Fun. Do Excellent Work."



Lead Worker Safety Training Classes
Nzilani Glass Conservation sets the Stained Glass Industry Standards by meeting or exceeding Regulatory Safety Standards.



Suits

- Each employee has 3 suits
- 1 clean
- 1 dirty (for use)
- 1 being cleaned by outside vender

Robin
Size 40R

Chloe
Size: 36R

Chloe
Size: 4

Chloe
Size: 4

Chloe
Size: 4

Gloves

- Worn when touching lead, or any area which *may* have had lead.
- All the time, every time.



Dismantling

- Old lead came is collected and recycled safely by a qualified firm.
- Putty "sludge" is also captured and put into bins for proper disposal.



Dismantling

- The water is strained through multiple filters down to 1 micron.
- They then go through an ion-exchange resin canister.
- Outgoing water is tested to ensure it is within regulatory levels
- The filters are safely changed by an outside vender.



Sticky Mats

- Peel away mats are changed at least once a day.
- Placed between dirty and clean areas of the studio.



Cleaning Protocol



- Localized cleaning happens daily after each task is completed.
- Weekly deep clean of the studio by the entire team.
 - The floor is mopped.
 - Work benches cleaned.
 - The eating area is scrubbed down.

Fume Hoods



- Multiple options in the studio, so no one can say it isn't available for use.
- Customized hood arms to go close to panel without touching it, reaching ideal horizontal placement.
- Air is drawn up and out of building through an air scrubber.

Site Work ...

We CAN & Should Change.



Containment

LARGE PROJECTS

- Scaffolding first
- Then shrinkwrap



Containment

SMALL PROJECTS

- Modular System
- Built by Nzilani Crew



Containment

SMALL PROJECTS


- Air scrubber added
- Signage keeps curious public at bay



Being in Compliance IS Possible.

START SMALL - 3 Easy Things to Begin






Change Your Shoes

- Designate a place at your entrance to change your shoes.
- Keep a pair of shoes that stays in the studio at all times in a plastic bag.
- Don't wear your street shoes in the studio.
- Consider changing your socks too.





Wash Your Hands

- Do so often between tasks.
- Always before eating.
- Always after changing shoes.

Don't Eat Where You Work

Choose a clean place
to eat & drink.

Store your food,
drinks, cutlery &
dishes there.

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THANK YOU TO:

- Karen Guderson,
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Insurance Fund
- Team Nzilani, for
Always Being Safe,
Having Fun & Doing
Excellent Work
- Organizers of the 2019
Safety and Cultural
Heritage Summit

