

## The sweet spot:

In baseball, that line drive ball in the gap is usually “barreled-up”. This refers to the sweet spot on the bat where maximum contact and power are achieved. Other analogies could be made outside of sports, but the concept is that - in order to get the maximum result a specific criterion must be obtained.

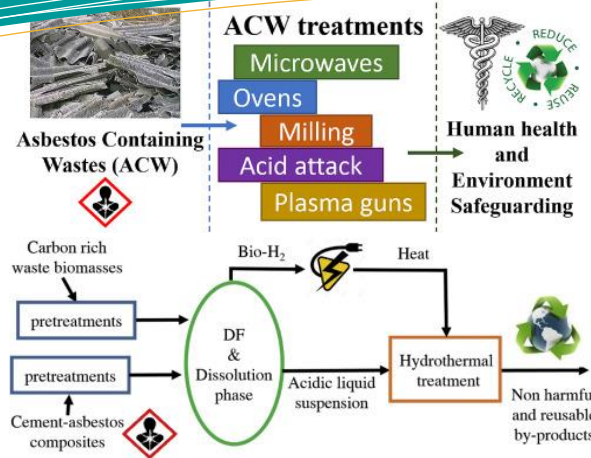
We see this in the laboratory to maximize analytical sensitivities, detection limits, etc., that the instrument must be aligned, calibrated, and conditions exact in order to secure the best analytical result.

### Altering Asbestos Minerals

In similar fashion as to how these minerals are created geologically, we can apply thermal, pressure, and chemical means to alter the mineral's chemistry and crystal structure... thus changing its definition to “not asbestos”. And, poof, like magic, no more problems as a whole host of issues disappear.

### Wait, what...?!

In order to achieve this alteration, we have to really hit the sweet spot in the vitrification or de-naturing process. Too many times, upon close inspection, the bundles of asbestos mineral help to perfectly insulate their neighbors. The result – a mixture of non-asbestos and un-altered unintentional asbestos mineral. That would be Strike 1, Strike 2, and...!



## this issue

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## Int'l Efforts Study Asbestos De-Naturing – Part 1

Over the last 40 years, there have been many attempts to transform asbestos-laden building materials removed from structures into innocuous material that might be used as a recycled filler at best – or at least just disposed of without concern or care. Those efforts came and went after the realization that scaling those pilot programs up to full-time operations would be too inefficient and ineffective. iATL participated in five such studies – four in North America sponsored by public investment (various US Government agencies) and private interests. A fifth project was based out of the EU. The hope of successful process that met all the criteria (below) was abandoned between 2007-2012. Yet, now there is renewed interest – especially in UK, Europe, and Austral-Asia countries.

The recent ASTM International Johnson/Rook Conference featured two speakers that presented some new information on these projects. One speaker, Federica Paglietti a government researcher in Italy, and the other, Yvonne Waterman an advocacy lawyer from the Netherlands, presented overviews of two separate pilot plant operations. In addition, presentations at other forums and symposia in Europe and Asia mentioned these and other such work in progress. Yet, these were overviews with lack of data on several fronts that would be essential to evaluate the effectiveness of such attempts. (see Part 2)

### Destroy, De-Nature, Alter

There are various degrees to which the asbestos mineral can be made harmless. Remember, these are bio-persistent, high tensile strength, unique crystalline fibrous minerals. If we follow basic physics and chemistry, we know that the energy that went into creating them geologically, will have to be applied towards their transformation. We can destroy just about anything with (a) thermal process –

melting the crystal structure into amorphous glass, (b) use mechanical means of pulverizing just about anything down to the sub-micron scale, and (c) use extremes of chemical or biological processes to alter the chemical framework of the mineral's crystal structure so that its structure changes or even collapses. Yet at what cost?

Perhaps, instead of the three options above, just one treatment option might be employed. The high heat version, vitrification, can yield glass material that would no longer be considered asbestos – and in fact, could be recycled into other materials for industrial processes. It has been found however, the most effective studies used combinations of mechanical reduction (which creates more surface area), a pre-thermal chemical or biochemical treatment (to help break down the chemical integrity of the asbestos mineral), and the high heat vitrification component.

### How is Effectiveness Measured?

Pilot studies continue to reveal that the high cost of energy into the thermal phase options is costly and alone ineffective. Accordingly, what other considerations must be accounted for to determine success?

- Energy costs to heat materials to over 700°C
- Hazardous Chemical costs/safety issues
- Biochemical pre-treatments that may then represent further disposal problems,
- Mechanical reduction that creates airborne concerns

See Next Level / Next Issue for iATL's findings over decades of studies.

Workshops on this and related subjects available by contacting [CustomerService@iatl.com](mailto:CustomerService@iatl.com).

## Context:

You put in the time and money getting trained and certified to monitor and provide exposure assessments for various clients. This includes calibrating pumps, assuring that the correct sampling cassettes, tubing, filters, etc. are available and that no Lot #s have expired. You travel at un-godly hours to construction and demolition sites, concrete cutting sites, stone quarry sites, etc. to set-up area and personnel sampling devices (yes, workers do not always love you), and then you look for a space that you can call your own. An out-of-the-way desk in warm office overlooking the activities – yeah right, how 'bout in between the diesel and propane fumes of heavy equipment as you avoid eyesight of the project managers on site that cannot see the obvious violations so apparent to you....

## All this to say:

All you can really do is focus on your duty and task at hand. Your chain-of-custody and detailed sample log that describe the site, the weather, the conditions, and each sample's essential attributes of calibrated flow rates, time(s), and calculated volumes. Oh yeah, and those regulatory required blanks. You take pride in this occupational health and safety practice. You ship the samples off to that accredited IH laboratory and a couple days later – whether by email, or client portal, or link sent to your device – there, finally, is your analytical report. Now what?!

# Silica – Report Interpretation Part 1... Next Level

iATL's various accreditations, especially ISO17025 through AIHA LAP and others, restrict the ability to provide interpretation of analytical data for customers. Yet, these rules apply generally to NOT providing prescriptive answers like "yes, it passes" or "no, it fails and you should do X or Y about it". That said, we are at liberty to provide vital references, resources, and dialog with customers to increase awareness and understanding of the analytical data and its meaning.

## Your RCS Analytical Report:

The analytical report is loaded with vital information traceable back to all the work you completed at the project site. It also lays out various components of the samples broken down here as "the Basics", some "Next Level" Data, and finally the meat of the report and method: the "OSHA Level Results".

**The Basics** - This represents and mirrors your sample log (example here) and the basic gravimetric data. Recall that the NIOSH 7500 method for respirable crystalline silica also involves the principles behind NIOSH 0600 for total respirable dust by gravimetry.

Sample ID	Media	Analyte / Method	Volume	Sample Date/Time	Location	Start Time	Stop Time	Flow Rate (L/min)
A1.1	37mm PVC	Crystalline Silica	455	10/8/22	OWA-By the tower	2:30	5:32	2.5
A1.2	37mm PVC	Crystalline Silica	632.5	-/-	booth HR127	5:32	9:45	2.5
A2.1	37mm PVC	Crystalline Silica	447.5	-/-	IWA-By the V179+50	2:35	5:34	2.5
A2.2	37mm PVC	Crystalline Silica	635	-/-	marker on Platform	5:34	9:48	2.5
P1.1	37mm PVC	Crystalline Silica	442.5	-/-	on worker named	2:40	5:37	2.5
P1.2	37mm PVC	Crystalline Silica	632.5	-/-	"Cristian Tenesara"	5:37	9:50	2.5
FB1	37mm PVC	Crystalline Silica	-	-/-	Field Blank 1	-	-	-
FB2	37mm PVC	Crystalline Silica	-	-/-	Field Blank 2	-	-	-

Above sample log from onsite field hygienist that lists unique sample ID numbers, reference to filter and collection media, the requested analytical method, and sample collection flow rates, on/off times, calculated volumes (L), dates, location for environmental samples (A=area) and occupational samples (P=Personal).

Analytical Method: Gravimetry, NIOSH 0600\* and X-Ray Diffraction, NIOSH 7500, 03/15/03

iATL No.	Client Sample No.	Volume (L)	Respirable Dust Mass (mg/filter)	Masses of Respirable Crystalline Silica Minerals (mg/filter)			Weight Percentage of Respirable Crystalline Silica Minerals			Airborne Concentrations (mg/M <sup>3</sup> )			
				Quartz	Cristobalite	Tridymite	Quartz	Cristobalite	Tridymite	Respirable	Quartz	Cristobalite	Tridymite
7507589	A1.1	455	<0.10	<0.005	<0.01	<0.01	<5	<10	<10	<0.22	<0.011	<0.022	<0.022
7507590	A1.2	632.5	<0.10	<0.005	<0.01	<0.01	<5	<10	<10	<0.158	<0.008	<0.016	<0.016
7507591	A2.1	447.5	<0.10	<0.005	<0.01	<0.01	<5	<10	<10	<0.223	<0.011	<0.022	<0.022
7507592	A2.2	635	0.15	0.009	<0.01	<0.01	5.9	<6.7	<6.7	0.235	0.014	<0.016	<0.016
7507593	P1.1	442.5	0.49	0.056	<0.01	<0.01	11.3	<2	<2	1.116	0.127	<0.023	<0.023
7507594	P1.2	632.5	0.41	0.083	<0.01	<0.01	20.4	<2.5	<2.5	0.643	0.131	<0.016	<0.016
7507595	FB1	FB	<0.10	<0.005	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA
7507596	FB2	FB	6.03	<0.005	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA

X-Ray Diffraction by NIOSH 7500. Total respirable dust by NIOSH 0600\* (gravimetry). iATL assumes all sampling methods and data upon which these results are based have been accurately supplied by the client. 1000L = 1M<sup>3</sup>. FB = Field Blank. Filter Type: 37mm 5.0µm PVC. Reference OSHA 29 CFR 1910.1053. Absorption correction factor is not applied unless noted. AIHA-LAP, LLC Lab No. 100188. \*NIOSH 0600 Modified - see attached appendix

Above iATL Respirable Crystalline Silica Report that also lists Lab and client sample ID numbers, volumes, and a wealth of additional data.

Learn more in Part 2 of our next Next Level will discuss Next Level Data and OSHA Final Results. To request a copy of iATL's Technical Bulletin No. 31 on Understanding your RCS Report Data and a copy of our AIHA LAP IHLAP accreditation – please contact [CustomerService@iatl.com](mailto:CustomerService@iatl.com).

## Q: Why is silica considered a hazard when it is so common?

**A:** Respirable crystalline silica – very small particles at least 100 times smaller than ordinary sand you might find on beaches and playgrounds – is created when cutting, sawing, grinding, drilling, and crushing stone, rock, concrete, brick, block, and mortar. Activities such as abrasive blasting with sand; sawing brick or concrete; sanding or drilling into concrete walls; grinding mortar; manufacturing brick, concrete blocks, stone countertops, or ceramic products; and cutting or crushing stone result in worker exposures to respirable crystalline silica dust. Industrial sand used in certain operations, such as foundry work and hydraulic fracturing. Workers who inhale these very small crystalline silica particles are at increased risk of developing serious silica-related diseases, including: Silicosis, an incurable lung disease (leading to disability and death), Lung cancer. Chronic pulmonary disease (COPD); and Kidney disease

**MMWR | Silicosis in Stone Fabrication Workers**

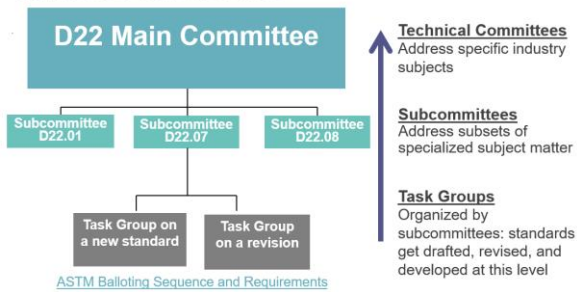
Silicosis	Workers are at risk	How to protect workers
<ul style="list-style-type: none"> <li>• Incurable lung disease</li> <li>• Occurs after breathing silica dust</li> </ul>	<p><b>18 cases in 4 states</b></p> <p><b>2 deaths</b></p> <p><b>Most worked with engineered stone</b></p>	<ul style="list-style-type: none"> <li>• Control and monitor exposures</li> <li>• Comply with standards</li> <li>• Conduct medical screening</li> </ul>

Cases identified in CA, CO, WA, and TX through surveillance and case reports as published in Ross, Heinzerling, et al. MMWR 2019. <https://doi.org/10.1093/mmwr>

[www.cdc.gov](http://www.cdc.gov)

## Technical Committee Structure:

Organization of Volunteer Members



# International Asbestos Method Development

### What's New in Asbestos Standards...

Outside of our participation on boards and committees with AIHA LAP AAB, AIHA SAP, and other regulatory and accreditation groups, iATL continues to be intimately involved in the two leading organizations that develop and maintain standards related to *all things* asbestos. Both the American Society of Testing Materials (ASTM) International and the International Organization for Standardization (ISO) continue to engage regulators, laboratory experts, geologists, and field management engineers, etc. to maintain and improve existing practices, methods, and standards – as well as develop additional consensus standards for the ever-evolving asbestos-related challenges.

For [ASTM](#) Sub-Committee D22.07, recent meetings in Seattle and Vermont with upcoming meetings in Denver and Philadelphia in 2023 will be used to conduct society and committee business as well as to report and present updates on a suite of additional standards in development. The nearly 30 standards, methods, guidance documents, and practices being maintained are joined by the dozen new work items going through the consensus standard process (no easy task).

[ISO](#) Technical Committee 146, with a handful of working groups, has a similar story but they have yet to meet in person since the global pandemic forced all meetings to be virtual. Yet, progress continues on many updates and new items are in development.

As a reminder, the consensus standard process can be as arduous and challenging as it is systematic and regimented. All of this is to assure the best possible science, expert deliberation, and safeguards so that all pertinent input is accounted for.

**“To retain respect for sausages and laws, one must not watch them in the making.”**

- Otto von Bismarck

While ISO participation is more by-invitation only, for information on joining ASTM contact either [awiand@astm.org](mailto:awiand@astm.org) or [frankehrenfeld@iatl.com](mailto:frankehrenfeld@iatl.com) and specify D22.07.

### ASTM List\* of current and in development standards:

D7201 - Air, Fibers in Workplace by PCM/TEM  
 D6058 - Air, Ceramic Fibers by PCM, TEM  
 D6281 - Air, Asbestos Concentration TEM  
 D6480 - Dust, Asbestos by Wipe TEM  
 D5755 - Dust, Asbestos by Microvac TEM  
 D7390 - Dust, Guide for Evaluating Asbestos  
 D7521 - Soil, Asbestos by PLM/TEM  
 D6620 - Detection Limits for Asbestos Fiber Counts  
 D7712 - Terminology of Asbestos Standards  
 D7886 - Management, Exposure Assessments  
 E1368 - Management, Visual Inspection  
 E1494 - Management, Properties of Friable Matls  
 E2356 - Management, Comprehensive Building Surveys  
 E2394 - Management, Asbestos Cement Products

WK – Nano, Analysis of nanoparticles by TEM  
 WK – Dust, Releasability of ACP by Microvac PCM  
 WK – Bulk, Asbestos mineral by SEM EBSD  
 WK – Pathology, Minerals in Tissue by TEM  
 WK – Air, Automated Counting by AI PCM  
 WK – Soil, Respirable/Releasable in FBAS by TEM  
 WK – Soil, Analysis of Asbestos in Vermiculite by TEM  
 WK – Soil, Research Vermiculite by PLM/TEM  
 WK - Soil, Erionite by PLM/TEM/SEM/XRD  
 WK – Soil, NOA by PLM/XRD/TEM  
 WK – Talc, Cosmetic Product Gravimetric Reduction  
 WK – Talc, Asbestos Minerals in Powders by XRD  
 WK – Talc, Asbestos Minerals in Powders by PLM  
 WK – Talc, Asbestos Minerals in Powders by TEM  
 WK – Prep, Heavy Liquid Separation for TEM  
 WK – Prep, Acid/Base Digestion for TEM  
 WK – Data, Populations with Fibrosity Index by TEM  
 WK – Data, Bi-Variant Distributions Populations

### ISO List\* of current and in development standards:

10312 – Air, Qual/Quant TEM Direct  
 13794 – Air, Qual/Quant TEM Indirect  
 22262-1 – Bulk, Qualitative by PLM/XRD/TEM/SEM  
 22262-2 – Bulk, Quantitative by PLM/XRD/TEM/SEM  
 22262-3 – Bulk, Quantitative with Mass Fraction  
 14966 – Air, Qual/Quant by SEM

WK refers to work item in development.

\*Full titles are greatly abbreviated here. Work Items likewise not identified by work items numbers but by abbreviated titles/intent.

## EYE ON IT

### Terminology

You will find definitions and terminology in all analytical methods. These are essential so that users and those interpreting data can employ the results in any manner of decision-making. Yet, there are redundancies, overlaps, and terms from method-to-method and revision-to-revision that can be in slight conflict. Standardization = Harmonization. But this juxtaposition may not always exist when definitions and terms are reviewed carefully. Such is the historical roots, the initial and evolving “ownership” of these concepts, and the input of stakeholders (dozens) that try to settle differences in scientific conferences or, unfortunately, through litigation and court rulings. Stay Tuned!

### iATL Customer Resources

#### Because you asked...

Data interpretation and summary USEPA's Toxicity Characterization Leachate Program (TCLP) including sample collection, two-tiered laboratory preparations, analysis, data reports, and MCL's. Ask [CustomerService@iatl.com](mailto:CustomerService@iatl.com)



#### Helpful Links...

- [USEPA 1311](#)
- [TCLP Basics](#)
- [RCRA](#)

## Professional Development

Is it time to increase your understanding and awareness of some nuanced technical issues? email [info@iatl.com](mailto:info@iatl.com).

### 2023 iATL Online Workshops

iATL Laboratory Director and noted speaker and presenter, Frank Ehrenfeld, will reprise many recent workshop-style presentations for our clients throughout 2023. Expect registration news in coming weeks for March, May, July, September, and November offerings. Topics may include:

- Asbestos and Talc Issues
- Erionite and other EMPs
- Natural Occurrences of Asbestos (NOA) – Evolving International Solutions
- Analytical Methods for Asbestos & International Advances
- WTC 9/11, 20 Years Later Lessons Learned
- Asbestos in Dust - Updates
- Asbestos in Water – What's New
- In situ Asbestos Analyzers
- Asbestos Disease Med Updates
- Vermiculite Method News
- Asbestos Work Practice Studies
- Asbestos in New Building Mat'ls
- Asbestos Vitrification – Updates
- Artificial Intelligence (AI) and Asbestos Analysis Progress
- eLearning through ASTM Int'l
- Combustion By-Product Analysis: Fire, Insurance, and Forensics

Registration for February 15, 2023, Webinar available here.

Register

Recent Validation Study in situ Real Time Asbestos Analysis for Fenceline Monitoring

### NEXT LEVEL

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Mention this Newsletter Issue and receive 5% off your next sample submittal

The iATL Christmas Elves are ready to bring you some great discounts on TEM air samples for school AHERA projects from December 15 thru January 15. In Elf Training this morning...

(1) Treat every day like Christmas by giving discounts to the nice customers!

(2) There's always room on the nice list for those who can be eligible for this limited offer!

(3) The best way to spread Christmas cheer is singing loud for all to hear.



So, don't be a Son of Nutcracker, sitting on your Throne of Lies, contact our iATL elves today at [CustomerService@iatl.com](mailto:CustomerService@iatl.com) and see how we can spread Christmas cheer discounts to all of you on our NICE list!

# Next Level

### BECAUSE YOU ASKED...

Respirable Crystalline Silica (RCS) pump and sampling equipment rental availability. Contact [CustomerService@iatl.com](mailto:CustomerService@iatl.com)



### iATL Customer Service Contacts:

Need assistance with questions on upcoming projects, or information on samples in the laboratory? Get answers from staff during normal business hours – or contact us...

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Emergency Contact(s):

(609) 923-7300

(609) 929-4211

Ask us about iATL's interactive LIMS Database, iTRACC Client Portal - for your devices - for your convenience

## Upcoming Events

- AIHA's Annual Conference: [AIHce 2023](#)  
May 20-25, 2023 Phoenix AZ
- Geological Society of America: [GSA 2023](#)  
Oct 15-18, 2023 Pittsburgh PA
- FAMANZ Annual Conference: [FAMANZ'23](#)  
Mar 21-23, 2023 Auckland NZ
- EIA Annual Conference: [EIA 2023](#)  
Mar 26-29, 2023 Nashville TN

## Next Issues for Next Level

- States expand lead (Pb) regs
- Asbestos Denaturing Part 2
- RCS Silica Reports Part 2
- Reporting Uncertainty
- Libby Amphiboles

Link to archived Next Level issues