

# **Erskine Environmental Consulting**

*Geologic Investigations · Hazardous Materials · Naturally Occurring Asbestos*

February 13, 2020

**Subject:** Response to Earthres letter dated January 30, 2020 by Louis F. Vittorio, P.G.  
"Comments dated December 23, 2019, from Steve Baluh, P.E. Regarding the "Qualitative Geologic Survey Report" dated November 15, 2019 Rock Hill Quarry (Pierson Materials/Hanson Aggregates) East Rockhill Township, Bucks County, PA"

The following is a response to EARTHRES' comments on the letter by Steve Baluh, P.E., referenced above. Many of EARTHRES' comments focus on subjects and opinions that originated in EEC's previous submittals, and therefore, inaccuracies, misstatements and unsupported conclusions that are present throughout the document require comment by EEC.

The comments are generally presented in the order presented in the EARTHRES document.

## **Page 1, Introduction.**

EARTHRES dismisses comments by Mr. Baluh because as a Professional Engineer, he is "not a geologist" and providing comments on "topics well outside his area of professional practice". It should be noted that there are areas of professional discipline in the fields of geology and engineering that overlap and require cross disciplinary education and experience. For example, California requires a license to provide services related to these fields as well as use the title of Certified Engineering Geologist (CEG) or Geotechnical Engineer (GE).

EARTHRES has a point where asbestos mineralogy and testing is concerned. The test methods that are referenced by the R.J. Lee Group (RJLG) were originally developed for building materials where a very narrow group comprised of six asbestos minerals were applied. As a result, these minerals are relatively easy to distinguish from one another, and it is possible for laboratory technicians without a geology degree to be trained sufficiently to apply the prescriptive test methods to building materials.

However, Naturally Occurring Asbestos (NOA) is a different matter altogether, and the field sampling and laboratory analysis requires the expertise of an experienced degreed geologist who, through many hours of coursework including field mapping, mineralogy, optical mineralogy, petrography, metamorphism, and rock and mineral fabrics and textures, can adequately analyze the occurrence, composition, and textures of minerals in the complex geologic setting. The National Sand, Stone, and Gravel Association (NSSGA) agrees: NSSGA's Mineral Identification and Management Guide states in its Appendix A, Identification of Protocol Mineral Fibers: "This analysis will be conducted by a geologist who has earned at least a BS and MS degrees in geology and with specific education and/or training in optical mineralogy".

As the company whose project geologist is responsible for validating the entire geologic investigation, including the selection of test methodology and interpretation of results, EARTHRES appears to defer to Mr. Van Orden of RJLG on subjects involving mineralogy, who, ironically, is a Registered Professional Engineer. By EARTHRES' own reckoning, Mr. Van Orden is commenting on "*topics well outside his area of professional practice*".

EEC does not fully agree with this position, but does agree that responses to comments should focus on the merit of the comment, and not distract attention by questioning the qualifications or intent of the commenter.

#### **Pages 2-4, Comments Regarding the Qualitative Geologic Survey Report (QGSR).**

EARTHRES provided many responses in defense of its QGSR. However, as indicated in EEC's previous reviews of the Qualitative Geologic Survey Sampling Plan (QGSSR) that was the basis for the investigation, there is ample evidence that the Qualitative investigation was compromised from the beginning, and no amount of testing or re-testing can mitigate its deficiencies. For example, the original QGSSP dated April 3, 2019 included a field screening tool to direct sampling:

*"Found mineral veins will be examined using a hand lens and fine steel pick to assess the presence of fibrous mineral morphology. If potentially suspect mineral morphology is identified, the mineral veining will be photographed and sampled in the following manner..."*

In its June 6, 2019 review of the QGSSP, EEC pointed out that the practice of field screening to direct sampling for asbestos is inappropriate and beneath any Standard of Practice for a Professional Geologist performing NOA investigations.

EEC also questioned the validity of a Qualitative assessment, and encouraged EARTHRES to revise the Qualitative plan to a level that meets the Standard of Practice for Professional Geologists. This comment was not accepted, and the April 3<sup>rd</sup> Qualitative Plan was implemented as originally designed.

This raises three questions:

1. What other techniques that direct sampling away from rocks that may contain asbestos were employed to produce the Qualitative report?
2. Can the PA DEP and Rock Hill Township residents have confidence in and rely on data produced during a Qualitative survey?
3. Why wasn't a proper Quantitative survey conducted in the first place?

The Qualitative techniques appear to have an origin within the assessment protocols found in the NSSGA Mineral Identification and Management Guide ("Identification Guide"). The identification Guide also allows for an arbitrary field assessment of whether or not a rock unit may or may not be comprised of "Protocol Fibers", and the EARTHRES response reiterates this.

Protocol Fibers are defined as asbestiform fibers, a subjective and imprecise term that cannot be used in the field, and there is no protocol for its determination in any test method that is relevant to the Rockhill Quarry project. As will be discussed below, EPA does not differentiate between fibers based on perceived crystallization morphology or habit, and OSHA recently has abandoned the term for its testing and reporting procedures. Further, RJLG appears to eliminate fibers, on a fiber by fiber basis, those that have tips which are not exhibiting an ideal morphology. This protocol appears to be based on RJLG's unique, unpublished and incorrect characterization of regulated asbestos. The overall plan and its implementation through its design removes fibers from reporting that would otherwise be reported, resulting in an under reporting of asbestos and miscommunication of potential risk to offsite residents.

The Qualitative basis of the investigation and testing procedures allows for sampling and testing procedures to deviate from normal industry practices, test method protocols, and current regulatory guidance. Based on the comments in the EARTHRES document, EEC's recommendation remains unchanged: PA DEP should contract directly with a Professional Geologist and experienced testing laboratory to conduct an unbiased investigation based on current Standard of Practice. The geologist and laboratory should have an appropriate body of experience with NOA, and neither should have a significant relationship with the mining industry.

#### **Page 4 (bottom): Comment on the Definition of Asbestos**

EARTHRES refers to a previous document submitted by RJLG and states that Hanson and RJLG *"has provided clear and unambiguous NOA terminology, definitions, and corresponding regulation references, including US EPA definitions pertaining to asbestos. Also provided were the appropriate definitions and regulations for asbestos as additionally regulated by the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA), as well as the appropriate analytical methods to be used for asbestos analysis"*.

These "definitions" are general descriptions of asbestos that was mined commercially, but are not incorporated into the test methods for good reason. The subjective interpretation of these terms and subsequent development of procedures that significantly deviate from the test method procedures is inappropriate. RGLG has indicated that it does not have an SOP to apply these deviations. Therefore, the test results cannot be validated as accurate, precise, and reproducible.

Two documents by EPA and OSHA have recently been released that illustrates the current viewpoint of these agencies. In both cases, differential counting procedures are not allowed. Each are summarized below, and are attached as appendices to this review.

Executive Summary, Preliminary Recommendations on Testing Methods for Asbestos in Talc and Consumer Products Containing Talc.

On January 6, 2020, the Interagency Working Group on Asbestos in Consumer Products (IWGACP) released an executive summary of its review of test methodologies as they apply to the analysis of naturally occurring asbestos to support the development of standardized testing methods for asbestos and other mineral particles of health concern in talc that could potentially affect consumer product safety<sup>1</sup>. The working group included representatives of EPA, OSHA, NIOSH, the USGS and other Federal agencies<sup>2</sup>.

This document (see Appendix A) was discussed in detail in the EEC memorandum dated January 21, 2020, and EEC refers the reader to that document. However, four conclusions that are particularly relevant to the "definition" issue are restated below (see number (3) for the definition of EMP and its purpose to resolve the "asbestos vs. non-asbestos ambiguity"):

1. *"Both types of elongate minerals (asbestiform habit and non-asbestiform habit) are suspected of having biological activity with similar pathological outcomes. Therefore, the distinction is irrelevant".*
2. *"Countable EMPs have an aspect ratio (AR) of >3:1 and a length of > 0.5  $\mu\text{m}$  using the most inclusive criteria for length and AR from among the "asbestos" counting rules in established testing protocols. Testing laboratories should report all EMPs having length  $\geq 0.5 \mu\text{m}$  (500 nm)".*
3. *"Adoption of the term EMP as "any mineral particle with a minimum aspect ratio of 3:1", consistent with how this term is defined in the NIOSH Bulletin 62, to resolve ambiguity and disagreement in mineral (asbestos versus non-asbestos) identification."*
4. *"Although IWGACP concludes that criteria for differential counting and classification of EMPs would be beneficial, no specific recommendations were agreed upon during deliberations. Therefore, at this time the IWGACP recommends reporting and counting all EMPs of covered minerals under a single classification with additional information that would allow further classification based on measurements such as mineral type and dimensions in the future".*

It appears clear that EPA, OSHA, NIOSH, USGS and other regulatory agencies do not subscribe to using the general definitions of "asbestos" as a method to differentiate particles from reporting requirements, and no form of differential counting should be used as a basis to remove fibers from reporting.

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<sup>1</sup> Executive Summary: Preliminary Recommendations on Testing Methods for Asbestos in Talc and Consumer Products Containing Talc, dated January 6, 2020.

<sup>2</sup> Food and Drug Administration (FDA), National Institute for Occupational Safety and Health (NIOSH), National Institute of Health (NIH)/ National Institute of Environmental Health Sciences (NIEHS), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Consumer Product Safety Commission (CPSC), the National Institute of Standards & Technology (NIST), and the U.S. Geological Survey (USGS).

OSHA Report of Evaluation of Cosmetics and Cosmetic Talc for FDA, 23 February 2019.

In 2019, and in support of the test method recommendations discussed above, OSHA conducted an evaluation of naturally occurring asbestos (termed “EMPs”) in talc deposits and products. This included “naturally occurring asbestos” in mines where talc has been extracted and cosmetic products where NOA is present as a natural byproduct. Several photographs where tremolite (the magnesium member of the actinolite-tremolite solid solution group) was identified as asbestos are shown in Figures 1 through 4. The photographs illustrate OSHA’s current viewpoint regarding the determination of whether or not a fiber should be reported as asbestos. The entire text is attached as Appendix B.

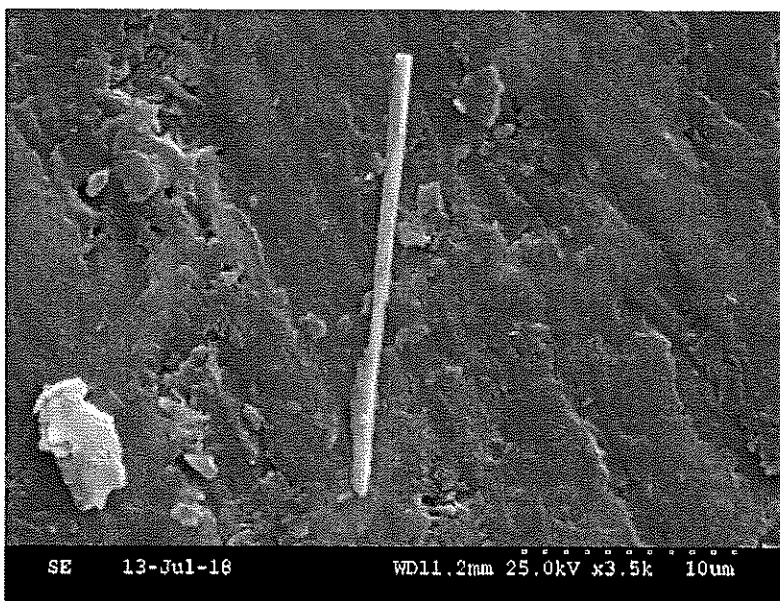


Figure 1: Sample 761227: Tremolite Asbestos

RJLG uses stepping sides and non-orthogonal fiber tips as criteria to identify a fiber as non-asbestos and eliminate it from reporting. This fiber has stepping, and the lower tip is pointed and not at right angles (Orthogonal) to the fiber. Also, the fiber is not curved and has no splayed ends. It is also approximately 1  $\mu\text{m}$  wide, well above the 0.1  $\mu\text{m}$  average width that OSHA cites as typical for an asbestos fibril. However, OSHA considers this fiber as asbestos, in spite of the general description or definition of asbestos in its test method used by RJLG.