



**SENT VIA E-MAIL ONLY**

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September 14, 2021

Richard Tallman, P.E.  
Pottsville District Mining Office  
Pennsylvania Department of Environmental Protection  
5 West Laurel Boulevard  
Pottsville, PA 17901

**Re: Rock Hill Quarry - Erskine Environmental Consulting, Inc. comments  
Hanson Aggregates Pennsylvania LLC  
SMP # 7974SM1  
East Rockhill Twp., Bucks Co., PA**

Dear Mr. Tallman:

Hanson Aggregates PA LLC ("Hanson") provides this response to the August 10, 2021 response letter (the "Letter") submitted by the Rockhill Environmental Preservation Alliance, Inc. ("REPA"), which included a technical memorandum prepared by Dr. Bradley Erskine of Erskine Environmental Consulting ("EEC"). EEC opined on Hanson's July 6, 2021 submission (the "Response") and, in particular, the Mineral Identification and Management Guide (the "Mineral ID Guide"), the Asbestos Monitoring and Mitigation Plan ("AMMP"), and preliminary sampling results collected in air, water, and overburden locations at the quarry.

EEC is especially critical of what it perceives to be Hanson's proposed NOA counting methods. In short, EEC argues that Hanson is "selectively and systematically" undercounting asbestos fibers in rock and air samples based on length to avoid regulatory and public scrutiny. This is simply not true. All fibers, regardless of length, are counted by Hanson at the perimeter air monitors. All perimeter air monitoring sampling results are shared with the Pennsylvania Department of Environmental Protection ("Department") within twenty-four (24) hours of receipt by Hanson. There will not be a scenario where the Department is unaware of the presence of NOA at the perimeter based on any "selective" or "systematic" counting scheme.

EEC's continued deliberate attempt to portray Hanson as a poor environmental steward unconcerned with the health and safety of the environment, our employees, and our neighbors is inaccurate and improper. Hanson has not avoided any scrutiny: since the Department's December 5, 2018 order ceasing mining activities at the site, all of Hanson's correspondence with the Department and its site investigation activities have been posted and made available for public review.

Ultimately, EEC's memorandum contains many inaccuracies and statements meant to confuse analysis of Hanson's Response, Mineral ID Guide, and AMMP. Enclosed, please find a response prepared by Hanson and its experts to the EEC Letter. Hanson reserves the right to further respond to any issues in the Letter.

Regards,



Andrew J. Gutshall, P.G.  
Area Environmental Manager

encl: as stated

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# **HANSON AGGREGATES PENNSYLVANIA LLC**

## **RESPONSE TO ERSKINE ENVIRONMENTAL CONSULTING AUGUST 3, 2021 TECHNICAL MEMORANDUM**

September 14, 2021

### **I. GEOLOGICAL ASSESSMENT**

#### **Sampling Protocol**

EEC begins its response with a review of Hanson's sampling protocol. EEC suggests that, using Hanson's Mineral Identification and Management Guide, Hanson's protocol as a whole produces a bias that, through design, will result in the avoidance of sampling for asbestos rather than characterizing materials for the purpose of identifying rock units that may contain asbestos. That is incorrect. Hanson's protocol does not undercount asbestos. To the contrary, Hanson's Mineral ID Guide broadly defines "protocol fibers" to include ***all*** asbestiform amphiboles, whether they are regulated or not, including the asbestiform serpentine mineral chrysotile, and durable fibrous zeolites.

EEC's challenges to Hanson's Mineral ID Guide as "highly biased" and "modif[able] where the results are averse to mining interests" are also incorrect and misconstrue the purpose of the Guide. Hanson has already submitted qualitative geologic survey reports that set forth an intensive assessment of the geology. (See Hanson reports dated August 14, 2020, and November 15, 2019). In conjunction with the reports, the Guide is designed to assist Hanson personnel in identifying other minerals that may contain asbestos, which can then be further analyzed to confirm its presence or not.

Contrary to EEC's suggestion, the Guide does not limit any counting of NOA at the quarry perimeter that must occur in accordance with Hanson's AMMP. Regardless of whether a Hanson professional identified NOA in aggregate during quarrying activities, ***any*** emissions detected during sampling that exceed the asbestos detection limit of the TEM analytical method will be counted at the perimeter monitoring stations.

#### **Non-asbestiform Fibers**

EEC misconstrues the Mineral ID Guide by focusing on Hanson's reference to cleavage fragments and their lack of association with asbestos-related diseases. According to EEC, this sentiment has been "refuted by NIOSH and the scientific community at large." It is important to note that NIOSH is a research agency that does not regulate asbestos. EEC's declaration is also demonstrably false. EEC ignores the National Institute for Occupation Health's ("NIOSH") conclusion in the *very report* to which it cites, wherein NIOSH unequivocally states that "uncertainty remains concerning the adverse health effects that may be caused by non-asbestiform EMPs." See Asbestos Fibers and Other Elongate Mineral Particles: State of the Science and Roadmap for Research (April 2011), at 33.<sup>1</sup>

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<sup>1</sup> <https://www.cdc.gov/niosh/docs/2011-159/pdfs/2011-159.pdf>

EEC's selective excerpt from the NIOSH report is intentionally deceiving. As acknowledged by NIOSH, OSHA rejected including non-asbestiform tremolite, anthophyllite and actinolite ("ATA") in the scope of OSHA's asbestos standard. See 57 Fed. Reg. 24310 (June 8, 1992). In its regulatory proposal, OSHA first reviewed the available health effects evidence and preliminarily concluded that:

there are a number of studies which raise serious questions about the potential health hazards from occupational exposures to non-asbestiform tremolite, anthophyllite and actinolite.

55 Fed. Reg. 4943 (Feb. 12, 1990)

Thereafter, OSHA removed non-asbestiform ATA from its asbestos standard:

OSHA does not believe that potential asbestos contamination of nonasbestos minerals, including nonasbestiform ATA, is sufficient reason to include such nonasbestiform minerals in the asbestos standard.

57 Fed. Reg. 24310.

OSHA noted "that virtually no other participant endorses the NIOSH study as a basis for regulation." Id. at 24322.

Later in 2008, as acknowledged by NIOSH in its report, the Mine Safety and Health Administration ("MSHA") declined to expand its regulatory "asbestos" definition to include non-asbestiform minerals. See 73 Fed. Reg. 11283, 11296 (Feb. 29, 2008). NIOSH submitted a comment during the regulatory process expressing its concurrence with MSHA's decision:

NIOSH agrees with MSHA's decision not to modify its definition of asbestos within this particular rulemaking. NIOSH is presently re-evaluating its definition of asbestos and nonasbestiform minerals and will work with other agencies to assure consistency to the extent possible.<sup>2</sup>

Finally, in its 2011 report cited by EEC, NIOSH states:

NIOSH recognizes that its 1990 description of the particles covered by the REL for airborne asbestos fibers has created confusion, causing many to infer that the nonasbestiform minerals included in the NIOSH definition are "asbestos." *Therefore, in this Roadmap, NIOSH makes clear that such nonasbestiform minerals are not "asbestos" or "asbestos minerals,"* and clarifies which particles are included in the REL [recommended exposure limit]. (emphasis added).

See Asbestos Fibers and Other Elongate Mineral Particles: State of the Science and Roadmap for Research, at 33.

NIOSH concluded its report and review of various studies by stating that:

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<sup>2</sup> Comments of the National Institute for Occupational Safety and Health on the Mine Safety and Health Administration Proposed Rule on Asbestos Exposure Limit (October 13, 2005), *available at* <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.642.6028&rep=rep1&type=pdf>

[U]ncertainty remains concerning the adverse health effects that may be caused by nonasbestiform EMPs encompassed by NIOSH since 1990 in the REL for asbestos

and that:

NIOSH also wishes to minimize any potential future confusion by no longer referring to particles from the nonasbestiform analogs of the asbestos minerals as “asbestos fibers.”

Id.

Thus, EEC’s contention that NIOSH and the scientific community have refuted Hanson’s statement that cleavage fragments are not associated with asbestos-related diseases is patently false and misleading.

## II. ASBESTOS MONITORING AND MITIGATION PLAN

As with his review of Hanson’s Mineral ID Guide, EEC’s criticism of Hanson’s Asbestos Monitoring and Mitigation Plan as seeking to avoid NOA is simply not true. With respect to Hanson’s corrective action threshold, EEC states:

DEP intended that all fibers that are  $\geq 0.5$   $\mu\text{m}$  be reported and the resulting concentrations be applied to any agreed upon perimeter threshold. **Hanson appears to be circumventing this directive, and intends to use a subset of particles rather than the whole data set.** (emphasis added).

Here, EEC conflates Hanson’s counting and reporting obligations with its corrective action threshold. Whether a corrective action is necessary is the result of a straight-forward, two step analysis. First, as stated above, Hanson will count all fibers greater than or equal to 0.5  $\mu\text{m}$  and will provide that data to the Department. Second, from that set of perimeter air data, Hanson will count those asbestos fibers that exceed 5 micrometers. The Department will be able to monitor the total amount of fibers counted (if any) and whether Hanson has taken any corrective action.

Still, EEC poses the question:

If EPA requires the reporting of all fibers, bundles, clusters and matrix structures that are  $\geq 0.1$   $\mu\text{m}$  for re-occupancy in school buildings, why would DEP feel it appropriate to selectively remove all fibers that are  $\leq 5$  for children who reside or attending school near the site?

This is a wholly inaccurate presumption. Per the Department’s direction, Hanson’s AMMP requires that, for all air samples, Hanson use ISO 10312-2019-10 “Ambient Air – Determination of Asbestos Fibers – Direct Transfer Transmission Electron Microscopy Method,” as modified by the United States Environmental Protection Agency’s (“EPA”) “OSWER Directive #9200.0-68, September 2008 Framework for Investigating Asbestos-Contaminated Superfund Sites (the “Framework”).” All asbestos fibers that are 0.5  $\mu\text{m}$  in length or greater will be counted. See Hanson AMMP, Section 3.4 (Analytical Methods). Further, Hanson will provide all analytical reports to the Department within twenty-four hours of Hanson’s receipt from the laboratory. See AMMP, Section 3.5 (Recordkeeping and Reporting). Finally, it is absolutely inaccurate to presume that the concentration measured at the perimeter of the property would be equivalent to the concentration measured at some undetermined distance.

To determine whether corrective action is necessary, Hanson has established a perimeter threshold based on the counting of asbestos fibers that exceed 5 micrometers in length. As Hanson detailed in its Response, this minimum 5 micrometer length threshold is the only asbestos fiber dimension that is associated with health risk.

This approach is also consistent with EPA's Asbestos Framework, which outlines two steps. First, EPA's Framework uses a general counting scheme to identify fibers that are 0.5  $\mu\text{m}$  in length or greater. Second, for the purposes of determining risk, EPA states "[a]ll fibers longer than 5  $\mu\text{m}$  with an aspect ratio  $\geq 3:1$  and a width  $\geq 0.25 \mu\text{m}$  and  $\leq 3 \mu\text{m}$  are used to estimate exposure and risk." *Id.*, at 26. EPA's Framework employs an inhalation unit risk for asbestos derived for Phase Contrast Microscopy ("PCM") and PCM-equivalent ("PCMe") structures – that is, derived specifically for asbestos fibers that exceed 5  $\mu\text{m}$  in length. *See id.*, Appendix C, at C-4. EPA aptly explains that the ISO 10312 method allows for the characterization purposes and for *recording* of all fibers to inform future analysis in the event that new toxicity models be developed, but recognizes that toxicity is analyzed only according to PCMe fibers. *See id.*, at C-1.

With respect to its derivation of risk values for a continuous exposure scenario, EPA states:

As seen, risks (expressed as asbestos-induced cancer deaths per 100,000 people) are provided for exposure to **0.01 PCM f/cc** for a range of differing ages at onset (age at first exposure) and exposure durations, stratified by cancer type (lung cancer and mesothelioma) and by gender

*See id.*, at Appendix E, E-2.

Thus, it is clear that, based on EPA Framework guidance, for the purposes of calculating continuous exposure, EPA bases its calculation on *PCM* fibers, which only counts fibers that exceed 5  $\mu\text{m}$  in length. This is consistent with EPA's Superfund practice: at the Ambler Asbestos Piles Superfund Site, EPA states the following:

To assess risk using TEM data, TEM results are reported as PCM-equivalent (PCME) structures per cubic centimeter (s/cc) to ensure comparability to the toxicity data. PCME structures are defined as structures with a length greater than 5  $\mu\text{m}$ , a width greater than or equal to 0.25  $\mu\text{m}$ , and an aspect ratio (length:width) greater than or equal to 3:1. EPA performed a toxicological review of the validated sampling data to assess the level of risk associated with the potential inhalation of asbestos fibers under trespasser/recreational and maintenance worker exposure scenarios. **Only PCMe fibers were used to assess risk for this FYR, consistent with EPA Office of Solid Waste and Emergency Response (OSWER) Directive #9200.0-68, Framework for Investigating Asbestos Contaminated Superfund Sites, dated September 2008.**

See EPA Fifth Five-Year Review Report for Ambler Asbestos Piles Superfund Site (June 2017), at 12.<sup>3</sup> (emphasis added).

EPA stated the same with respect to the BoRit Asbestos Superfund Site:

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<sup>3</sup> <https://semspub.epa.gov/work/03/2246033.pdf>.

The analytical method recommended by EPA OSWER Directive #9200.0-68, Framework for Investigating Asbestos-Contaminated Superfund Sites. for quantifying asbestos concentrations in air is transmission electron microscopy (TEM)- ISO 10312. EPA recommends the TEM-ISO method at Superfund sites, because it allows recording of all fibers to inform future analysis should new toxicity models be developed. The TEM-ISO method is used for the determination of the concentration of asbestos structures in air samples, and includes measurement of the lengths, widths, and aspect ratio (ratio of length to width) of the asbestos structures. During the RI, all ABS and ambient air samples were analyzed by TEM-ISO 10312. **Because the toxicity data used as the basis of the asbestos inhalation unit risk are based on analyses performed using phase contrast microscopy (PCM), TEM analysis results from the RI were reported as PCMequivalent (PCME) structures per cubic centimeter (s/cc).** It is anticipated that TEM-ISO 10312 will continue to be used in any future air sampling efforts for the Site. However, use of TEM-ISO 10312 is not required by the ROD so that other sampling methods may be used at the Site if determined to be appropriate in the future. (emphasis added)

See EPA Record of Decision, BoRit Asbestos Superfund Site (July 2017), at 117.<sup>4</sup>

Consideration of asbestos fibers in excess of 5 micrometers to assess risk is entirely consistent with existing epidemiology and with EPA practice. EEC has seemingly acknowledged this in prior submissions to the Department, in which it approvingly cited to the following EPA comment made during the El Dorado Hills Asbestos Evaluation:

To present the 20:1 aspect ratio for commercial grade asbestos as a universal EPA policy, and to advocate its use as an appropriate standard for analyzing air samples of naturally occurring asbestos **is inappropriate and contradictory to use of the PCME dimensional criteria as a tool for assessing exposure risk.**

See Erskine Environmental Consulting Technical Memorandum (October 13, 2019), Appendices, at 7.<sup>5</sup> (emphasis added).

Hanson's proposed counting scheme and corrective action threshold are consistent EPA's Framework. Given that EPA clearly only considers the use of PCMe asbestos fibers that exceed 5 µm in length when analyzing risk, it is unclear why EEC states that Hanson's proposed method is not in conformance with EPA protocol.

### **Corrective Actions**

EEC opines that the:

AMMP should include a mandated set of response actions, such as increased dust control, reduced level of disturbance, or even shut down, depending on daily results or trends over several days.

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<sup>4</sup> <https://semspub.epa.gov/work/03/2244733.pdf>.

<sup>5</sup> Available at <https://rockhillpa.org/wp-content/uploads/2019/10/FINAL-Review-of-RJ-Lee-Group-Letter.pdf>.

EEC also states that “Hanson proposes using 0.01 f/cc as a corrective action threshold (but does not provide any specific corrective actions).”<sup>6</sup> As with its opinion of the Guide, EEC’s theme is that Hanson should not be permitted to exercise any professional judgment, which is not a realistic suggestion. Hanson personnel are well trained and more than capable of implementing Hanson’s corrective action scheme to the satisfaction of the Department.

EEC also quibbles with Hanon’s use of the word “may” in the context of

[t]he corrective actions **may** include investigation of the source of any airborne asbestos, extra dust suppression measures, cleanup, repairs, or modifications to systems and controls, or temporary cessation of operations.

See Hanson Response, at 10(c). (emphasis added).

Simply put, Hanson’s AMMP properly contemplates that professional judgment will be used to determine the necessary corrective action. More importantly – a point that EEC omits – the Department will be provided all Hanson sampling reports, all reports that indicate an exceedance of the corrective action threshold, and a report on the steps Hanson has taken to investigate and mitigate the response. **There will not be a scenario whereby Hanson avoids Department scrutiny.**

Per Hanson’s AMMP, if Hanson identifies any sample in excess of 0.01 asbestos fibers/cc, Hanson will notify the Department within 24 hours of receipt of the laboratory results, commence daily air sampling of the identified location for seven (7) days, and investigate the cause of the results. Hanson will also take immediate corrective action measures, which may include *temporary cessation of operations*, and will provide a report to the Department within seven days of the steps it took to investigate and mitigate the source of the NOA.

It is unclear how Hanson’s proposal differs in any material respect from that suggested by EEC. EEC’s proposal would presumably remove any discretion of Hanson to assess any particular scenario and any ability of Hanson to coordinate with the Department.

EEC states that Hanson appears to be circumventing the Department’s “request to report all asbestos fibers by applying a small subset of fibers for action item purposes,” and that EPA makes no distinction between fiber length. EEC’s criticism is unfounded. As discussed above, Hanson’s proposed action level is the same action level provided by the Department in its April 12, 2021 Technical Deficiency Level. EEC is also wrong in opining that EPA makes no distinction among fiber length when calculating risk. As stated above, EPA calculates a continuous exposure risk-based threshold of 0.01 PCM f/cc:

As seen, risks (expressed as asbestos-induced cancer deaths per 100,000 people) are provided for exposure to **0.01 PCM f/cc** for a range of differing ages at onset (age at first exposure) and exposure durations, stratified by cancer type (lung cancer and mesothelioma) and by gender.

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<sup>6</sup> This is the same target threshold value approved by DEP at the Specialty Granules Quarry (“SGI”). See SGI Asbestos Monitoring and Mitigation Plan, *available at* <https://files.dep.state.pa.us/RegionalResources/SCRO/SCROPortalFiles/Community%20Info/SpecialtyGranulesQuarry/01180301/SMPandNPDESPermits/Asbestos%20Monitoring%20and%20Mitigation%20Plan.pdf>

See EPA Framework for Investigating Asbestos-Contaminated Superfund Sites, OSWER Directive #9200.0-68 (September 2008), Appendix E, at E-2. (emphasis added).

Finally, EEC contends that Hanson will only undertake mitigation of the “harmful” migration of asbestos fibers and that Hanson is not qualified to determine whether NOA emissions are “harmful.” That is incorrect. Hanson cannot avoid implementing corrective action on the basis of its determination that asbestos is not “harmful.” As EEC is well aware, Hanson’s AMMP implements a corrective action threshold that was formulated in consultation with DEP. EEC’s criticism is again wrong and misleading.

### **Sampling Frequency**

EEC opines that daily monitoring must occur to ensure that dust control measures are effective and because the exposure risk is based on a continuous exposure scenario. Hanson has proposed to conduct perimeter air sampling on a bi-monthly basis. This sampling frequency is more than adequate to provide the Department with data to effectively monitor any NOA emissions at the perimeter of the quarry.

EEC’s contention that Hanson’s proposed bi-monthly sampling will not adequately capture variability in operational and weather conditions is unfounded. As Hanson states in its AMMP, during full quarry operations, a permanent weather station will be installed to monitor, among other information, wind speed and wind direction, and this data will be provided to the Department. During 500-ton removal operations, Hanson will collect a sample prior to operations and during the entirety of the 500-ton removal event (likely to last one day). As Hanson’s experts have properly concluded, a risk-based threshold based on a continuous exposure assumption does not require that exposure be assessed on a continuous, instantaneous basis.

### **Analytical Methods**

EEC criticizes Hanson’s AMMP as deceptive because it gives Hanson the ability to petition the Department to use NIOSH 7402 in place of ISO 10312. EEC suggests that Hanson is attempting to “circumvent” the Department’s directive to count all fibers that equal or exceed 0.5 um. Once again, EEC’s criticism is wrong and misleading. As Hanson has explained above at length, Hanson will count all fibers at the quarry perimeter during air sampling events and will provide the Department with those results. In any event, Hanson’s AMMP only permits Hanson to petition the Department to discontinue using ISO 1312 after *three years*, at which time the Department will have a comprehensive set of data to consider.

### **Activity Based Monitoring**

EEC opines that “one purpose of [activity based monitoring] is to characterize emission rates of each activity and apply them to air models designed to calculate a risk-based project perimeter threshold.”

As a preliminary matter, activity based monitoring that occurs in the proximity of the quarry operations will not limit any monitoring and sampling that occurs at the perimeter of the quarry. Instead, activity based sampling will complement perimeter air monitoring analyses with data collected more closely to the specific operations discussed in the AMMP. See Section 4 (Activity-Based Air Monitoring).

## **ISO 10312 Results**

EEC suggests that Hanson's preliminary test results "show that there are no offsite sources of asbestos, and any asbestos detected during operations will be fully attributed to those operations." EEC's assertion is unfounded and misconstrues Hanson's proposal.

As Hanson explained at length in its Response, Hanson will collect perimeter data at the quarry and extrapolate from that data any risk of exposure. Perimeter data provides the most accurate data as it relates to NOA from the Rock Hill Quarry, offers the most conservative background assessment scenario as it relates to offsite receptors, and provides readily comparable data against which Hanson can assess any incremental risk posed by future detections of NOA. Hanson's determination to extrapolate risk based on detections (if any) of NOA at the quarry perimeter also accounts for the impracticality of tracing asbestos encountered far offsite back to an original generator.

Although EEC acknowledges that "the dispersion of asbestos and reduction of concentrations with distance is well known," EEC apparently dismisses that reality when it alleges blank attribution and liability on Hanson for all asbestos found in the community. Rather than offer any analysis to counter the fact that asbestos does not significantly migrate from its source, EEC practices a simple exercise of process of elimination. Here again, EEC is contradictory in its speculation that all NOA would come from the site based on a very limited number of samples while elsewhere criticizing the AMMP as inadequate in terms of the number of samples to be collected. The background sampling conducted at the site cannot be used to definitively say that NOA detected at other distant locations should *per se* be attributed to Rock Hill Quarry. There can be no attribution as to the source of NOA detected at some other attenuated off-site locations without additional background analysis at that particular location. Like the rest of its commentary, EEC's statements are misleading, inaccurate and unhelpful.

## **Special Handling of Toxic Material**

EEC mischaracterizes the distribution of actinolite asbestos as "pervasive" throughout the diabase based on the petrographic analysis provided by the RJ Lee Group. There is no indication in that report as to the distribution of actinolite asbestos within the deposit and the report is entirely limited to the three samples examined. Further, the report describes the occurrence of fibrous amphibole within the limited number of rock samples examined to be present only in the two samples containing mineralized veins and areas immediately adjacent to the veins showing alteration of pyroxene to amphibole. One sample with no mineralized veins present was found to contain a small amount of non-fibrous amphibole indicating that not every sample analyzed contained NOA. Finally, to use this single analysis to indicate that NOA is "pervasive" throughout the deposit, while elsewhere criticizing the sampling of the deposit as being qualitative and inadequate is hypocritical. This result indicates the utility of performing a qualitative assessment in that suspect material was recognized in a hand sample, analyzed using microscopy, and found to contain NOA. This provides useful information to the professionals on site to guide site operations and/or additional sampling

Hanson remains committed to continuing to work with the Department to allow the removal of the Cessation Order so that quarrying activities can resume at the Rock Hill Quarry.