

**Statement by the *ad hoc* Longmeadow Road Committee on KEA's
Report: "An Evaluation of Pavement Dressing Conditioner"**

November 16, 2016

The *ad hoc* Longmeadow Road Committee has evaluated the report submitted by Killingly Engineering Associates titled "An Evaluation of Pavement Dressing Conditioner" and posted on the Town of Pomfret's website on Nov. 7th, 2016. The following major shortcomings are identified.

Incomplete description of differences between "Pavement Dressing Conditioner" and traditional "seal coats"

KEA correctly points out that the material applied to the pavement in the Longmeadow development, "Pavement Dressing Conditioner, PDC", is not identical to the pavement products known as "seal coats". Coal tar based seal coats have been extensively studied by many (e.g. Mahler *et al.*, 2012) and found to release significant quantities of various chemicals that are toxic to aquatic life and are likely to result in increased health risks to people living in the areas where these products are used (Williams *et al.*, 2012). While the product "PDC" has not been evaluated in terms of its health and environmental implications as of yet, it should be expected to have similar contamination issues as the seal coat products. KEA fails to mention that PDC contains much higher concentrations of polycyclic aromatic hydrocarbons (PAHs) than the traditional seal coats (over 65% coal tar products in PDC per the MSDS vs. 20-35% in traditional seal coats) ... a reasonable assumption would be that any material released from the road surface would be expected to contain high concentrations of PAHs which are major components of coal tar. Once the more volatile fraction of the naphtha in PDC evaporates, coal tar constituents should be expected to remain. In fact, preliminary chemical analysis (one by SiteLAB Corporation, and one conducted in Worcester Polytechnic Institute's Environmental Engineering Laboratory) of the road surface coating after the PDC "cured" has found PAH levels consistent with a coating made up of a high fraction of coal tar. Further chemical analysis is being conducted.

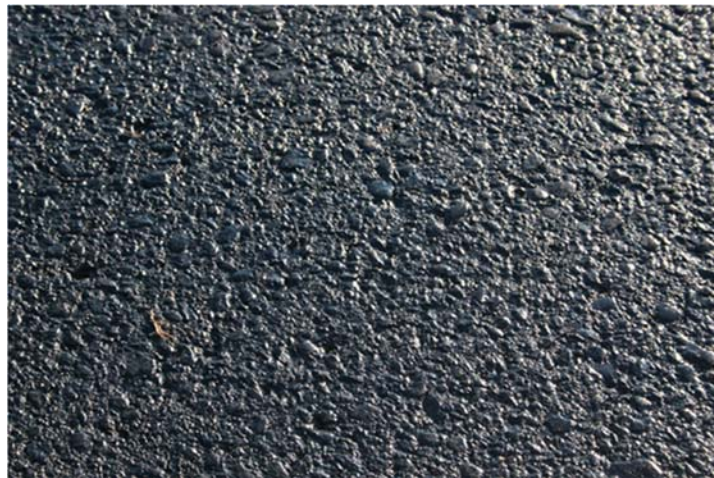
Failure to recognize surface coating of "Pavement Dressing Conditioner" that has the potential to wear

The KEA report describes the difference between rejuvenators, which the manufacturer of PDC claims it to be, and seal coats. However, KEA fails to recognize that PDC is surface applied, and a significant amount of material remains on the surface as a coating. See Figure 1. Evidently, the inventor of this product also understands this is a sealer ... in multiple US patents held by the owner of this technology, "seal" and "sealer" is used many times (for example, see column 4 of US patent 4,661,378). Although PDC is a different product than the traditional "seal coats" in that it has greater PAH concentrations and does not contain clay binder, it still is a "sealer" (as defined by the PDC owner) and a "coating" which is evident by inspection. Any argument (e.g. page 9 of the KEA report) that the PDC product, and the contaminants it contains, transfers into the pavement without leaving a surface coating is incorrect. KEA did not conduct any independent tests to verify penetration of the PDC into the pavement matrix. They merely relied on PDC manufacturer's claims.

In addition, KEA failed to cite a key published source which would provide further evidence of the presence of a surface coating ... A report by the US General Accounting Office on airfield pavements, described coal tar based pavement products, including PDC, as part rejuvenator, and part that “remains on the surface to protect the pavement against damage from fuel spills, air, and water” (US GAO, 1997).

It is also clear from statements made by Arthur McGovern, KAE Paving Consultants Inc., at a Town of Pomfret meeting on July 21, 2016, that the penetration of the material was only near the surface (approximately 3/8 inch). This is consistent with one of the Pavement Dressing Conditioner patents, US patent 4,661,378, which shows only 0.4 inch penetration over twelve months (drawing figure in the patent). This does not indicate a deep penetration that would be isolated from surface abrasion. In addition, at that meeting, he also claimed “higher than normal application rate” at the meeting. Again, clearly there is a surface coating that can subject contaminants to mobilization.

Figure 1. Photograph of PDC applied to Longmeadow road surface.



KEA concludes (P. 12) that there are “no studies or evidence to suggest that [PDC] functions or wears in the same manner” as traditional seal coats, and claimed that “... scratching with a fingernail and key did not result in removal of any of the product.” However, a key and fingernail should not be construed as a representative test for long term wear. Further, it is claimed that PDC becomes “... an integral part of the pavement structure” (P. 9 of the report), and Figure 3 indicates that rejuvenators such as PDC are not subject to frictional wear. This is erroneous. It is clear that PDC provides a surface coating, and this surface coating functions as a wear surface as it is repeatedly contacted with automobile and truck tires, sand, snowplows, freeze-thaw cycles, etc. Over time, pavement surfaces do indeed wear – see Figure 2 which shows a road surface with the bitumen worn away down to the aggregate. A comparison of Fig. 1 and Fig. 2 would reasonably lead to the conclusion that any coating, in this case a PAH-laden coating, would wear away, providing PAH mobilization into the environment.

Figure 2. Photograph of pavement surface from Anderson Road in Pomfret CT. Photo shows bitumen binder worn away from pavement leaving aggregate at surface.



There are many chemical and physical processes that result in wear, and it should at the very least be expected that abrasive wear would result in the formation of small PAH-laden particulate matter that researchers have found can mobilize in the environment. This particle mobilization has been shown to result in increased PAH contamination of local water courses (Mahler *et al.*, 2012) and has been linked to increased cancer risk in children due to dust mobilization into nearby homes (Williams *et al.*, 2012).

Failure to engage residents and qualified experts

It is evident that much of the material in KEA's report has originated with the PDC manufacturer's representatives, including information on the claimed application rates, details of the application procedures, claimed locations where this product has been applied throughout the country, and the claim that this product "becomes an integral part of the pavement structure". However, in spite of some discussion in the report of assumed resident concerns, KEA talked with only one resident (see p. 11 of report). KEA could have surveyed a more representative sample of residents in this 66 home development to get a better understanding of the concerns, and could have certainly attended many meetings where residents expressed their concerns. Residents would have welcomed the opportunity to provide additional facts. For example, KEA has apparently accepted the claim (p. 13) that Surtreat Technologies utilized fabric underneath the catch basin grates during PDC application, but residents would argue this is untrue and photographic documentation is shown in Figure 3. Resident Glenn Warner repeatedly asked the PDC applicators to cover the grates. Also, residents would dispute the claim by KEA that there was no noticeable odor on August 1st – the odor was quite noticeable throughout August.

Figure 3. Photo through grate showing oil-like sheen on water in catch basin at end of driveway #7 Fairview Circle, Pomfret Center, CT. Taken July 12, 2016 by Glenn Warner.



Further discussions with residents would have brought to light the concern for children playing on this material as residents are aware that exposure to the chemicals in coal tar exists. See Figure 4, which shows a darkened surface of a basketball indicative of the pavement coating material transfer to the ball surface. This illustrates direct dermal contact with contaminants of concern in the PDC.

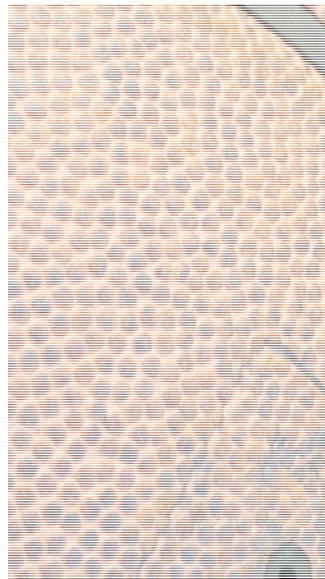


Figure 4. Pavement products on basketball.

Further, KEA's report does not document any interviews with:

1. Experts in chemical mobilization from pavement products,
2. Experts in pavement rejuvenators, or
3. Experts in chemical risk analysis.

It is evident that KEA is not qualified to render opinions on these topics (which are critical to any conclusions on this matter), and KEA should have engaged these people.

In addition, KEA blatantly copied material from www.truthaboutcoaltar.com, a website that attempts to challenge findings by the USGS showing PAH mobilization from coal tar sealed pavements. **The last paragraph of page 7 of KEA's report, and Fig. 2 in its entirety were plagiarized from this website.** While the company or individual responsible for the material on this website are not identified, a link is provided to the "American Coke and Coal Chemicals Institute" and the "Pavement Coating Technology Council", a lobbying group.

KEA ignored irrefutable scientific literature by experts in the field

KEA failed to discuss with any substance the literature that has irrefutably shown chemical (PAH) mobilization from coal tar products, with great potential for harm to aquatic life and potential human health consequences (such as important works by Mahler *et al.*, 2012, and Williams *et al.*, 2012). Coal tar itself has been found to be carcinogenic to humans (IARC, 1987) and mutagenic (Kienzler *et al.*, 2015), and some constituents in coal tar have been found to be probable carcinogens, such as benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene, and others (see Mahler *et al.*, 2012, and EPA's Integrated Risk Information System database). There are other contaminants of concern with the product; benzene is a known carcinogen (EPA's IRIS database) and has been found in coal tar (Koppers, 2015), and naphtha (Marathon, 2015; Prestvik, 2004). While we acknowledge the potential benefits of the use of rejuvenators as a pavement maintenance technology that may possibly result in cost reductions for municipalities, it is important to recognize the potential hazards with coal tar based products, and look for sustainable solutions going forward. In fact, there are many locations in the US undergoing remediation from coal tar contamination – as an example, Koppers, the original owner of the coal tar rejuvenation technology, is responsible for serious contamination at Superfund sites across the US, including Florida, Texas, California, and others (EPA ID FLD980709356, TXD980623904, CAD009112087, respectively, available at EPA's Superfund database: <https://cumulis.epa.gov/supercpad/CurSites/srchsites.cfm>). Clearly there are significant concerns with using coal tar products and an environmentally conscious community such as Pomfret should be looking at alternatives (the BOS is aware of rejuvenator alternatives). The application of approximately 1100 gallons (based on KEA's reported PDC application rate) of product that is composed of material that is known to be carcinogenic in a residential neighborhood is ill advised. In spite of the claim in the abstract of the KEA report to "compare [PDC] to other pavement treatment products", KEA did not provide any guidance to the town or community on more environmentally-friendly and sustainable products – and they are available.

Summary

KEA has missed crucial scientific points in their report, and these oversights invalidate their conclusions. In addition, KEA's report does not demonstrate critical engineering evaluation of available data, and critical evaluation of information provided by the PDC manufacturer/applicator.

There are current efforts underway by Worcester Polytechnic Institute (in collaboration with the US Geological Survey) to collect chemical mobilization data in Longmeadow; a report on this work will likely be published in April 2017. Pomfret's Board of Selectman is aware of these efforts. As the results of the current chemical mobilization testing are not yet known, no prudent engineer would provide conjecture as to possible outcomes without solid data. It is irresponsible to release KEA's report, which incorrectly assesses the potential health and environmental impacts without data or justification, when more information is forthcoming.

Signed by the following members of the *ad hoc* Longmeadow Road Committee.

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Sharon Verrilli

Glenn Warner

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