Exposure situation – PEAB’s use of Rediset LQ1102 CE in warm mix application – Exposure assessment
Background information
Air sampling of Rediset LQ1102CE in warm mix asphalt

AkzoNobel Surface Chemistry AB was interested in evaluating the occupational exposure of the warm mix additive Rediset LQ1102 CE.

As the supplier of Rediset LQ1102CE it has come to our knowledge that Acrolein may be formed in the process when Rediset LQ1102CE is mixed with asphalt during elevated temperatures. In order to investigate the occurrence of this byproduct in air, additional air samples were taken and analyzed for Acrolein.

PEAB was contacted in order to find a suitable road construction project where air samples could be taken.
• The result from the analysis of the air samples are to be used in the REACH registration dossiers of the chemical substances in the product, in accordance with the EU chemical legislation ”REACH”.
• The results will also be used by AkzoNobel to recommend our customers to handle the product in a safely way.
Air sampling of Rediset LQ1102CE in warm mix asphalt; PEAB’s project “Norra Länken”

Paving road surface in a tunnel such as “Norra Länken” is considered to be a “worst case scenario”, since the work is performed in an enclosed environment with limited ventilation.
Sampling spots – paving road surface in tunnel “Norra Länken”

Sampling spots:
1. Stationary point in the inhalation level at the end of the paver laying the asphalt
2. Person sampled in the inhalation level of the asphalt workers working next to the paver
Results: Measured levels in air
Components of Rediset LQ1102CE

1. Sampled and analyzed substances:
   - Ethoxylated amines (component of Rediset LQ1102CE)
   - Polyethylene amines (component of Rediset LQ1102CE)
   - Acrolein (by-product)

2. No quantifiable levels of any of the components of Rediset LQ1102CE were detected in any of the samples. No difference between the two sampling spots.

3. The analyzed acrolein samples indicated quantifiable levels of acrolein in 6 of 8 samples.
Conclusion

1. In all the samples taken, the concentration of components of Rediset LQ1102CE were below the limit of quantification and therefore well below the available reference value (DNEL-values) for safe use of the components.

2. Mean exposure measurements comply with the available Swedish Occupational Exposure Level 8 hour (OEL) for the byproduct acrolein.

3. This initial evaluation can conclude that for the general asphalt worker, the exposure levels in air are low. Exposure to acrolein on the paver also complies, but more data is needed to confirm that the 8 hour OEL level is consistently complied with. More measurements on the paver are recommended. Including measurement during open air application.

4. Need to fully understand the mechanism producing the acrolein byproduct and investigate the possibilities to reduce its generation.