Working together to answer industry’s most challenging questions

Assessing Collateral Damage

PROBLEM: A train carrying chlorine gas derailed and one of the tank cars ruptured, releasing about 60 tons of gas. A nearby resident claimed corrosive damage to her property from the leak. Determining the impact perimeter was critical.

We inspected the claimant’s property, conducted field evaluations, and collected and analyzed samples to evaluate impact.

CONCLUSION: We used scientifically sound data and observations to reliably discern between impacted and nonimpacted properties.

Improving Quality Control

PROBLEM: A medical device manufacturer faced major delays in product delivery because of problems with cured silicone components.

The lifecycle investigation revealed that the problem arose from an unreported formula change in molds used to create the silicone parts. This formulation change, though previously considered insignificant, threatened a major product launch and, potentially, consumer safety.

CONCLUSION: We worked with the client to develop more robust raw material specifications and testing to ensure quality and reduce downtime in the future.

Developing Simulations to Assess Risk

PROBLEM: In response to regulatory health requirements, a manufacturer needed to know the amount of respirable dust that could be generated by workers using their products under various conditions.

We constructed a control chamber in which to test products during simulated work scenarios. We analyzed the samples for total respirable dust and chemicals of potential concern and related the data back to anticipated real-world use.

CONCLUSION: We provided the client with enough information to appropriately label its products and comply with safety standards.

Investigating Material Failures

PROBLEM: A Mechanical failure may have contributed to a fatal airplane crash. The manufacturer of the 30-year old engine in question retained RJ Lee Group to examine the engine components.

Because some engine components were replaced with aftermarket items during an overhaul three years previously, we inspected the recovered engine components and noted their general condition. Using optical and electron microscopy, we compared the crash carburetor and engine components to an exemplar engine and fuel delivery system and observed that wear features and deposits were typical of in-service operation.

CONCLUSION: The metallurgical investigation of the engine components concluded that none of the evidence supported a mechanical cause for the
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