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## Question 77: What are your Best Practices for mitigating operational or performance risks throughout a catalyst changeover?

**REBECCA KUO** and **SHAUN PAN** (BASF Corporation)

It is understood that there are risks when changing catalysts. Objectives and constraints might change during the trial, or changes in operating conditions might skew expected performance. BASF employs an in-house risk minimization process in which we work very closely with the refinery to understand the unit is risks and identify mitigation measures to reduce those risks if they occur. Examples of risks are sampling issues, non-optimized catalyst activity, changing objective due to another unit outage, or limited quality operational data. Once all risks are documented with the refiner's input, BASF identifies potential causes, consequences, and mitigation steps for each specific problem. It is also important to identify follow-up actions and the follow-upowner (whether it should be the catalyst supplier or the refinery). It is important to regularly send e-cat and fines samples to your catalyst supplier before and during the catalyst changeover. If there is an operational or performance issue, having a baseline of activity, physical, and chemical properties will help troubleshoot the root cause of the problem. BASF has successfully used this process in multiple refineries that have been on another supplier for a number of years, both for new product trials and established catalyst technologies. In either case, the risk throughout the catalyst changeover is minimized so efforts can be diverted to process improvements and optimization.

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