**Risk Assessment Considerations**

FDA is interested in understanding if the change could affect device safety and effectiveness. Risk assessment is an important part of evaluating changes. The risk assessment should drive the appropriate level of testing and support the submission path (Annual Report or 30 Day Notice). Consider the following:

- Is the change related to MDRs or a Field Action? Is the change intended to be a corrective action for a safety or effectiveness issue?
- Does the DFMEA indicate that this is an essential design output (critical component)?
- Does the PFMEA indicate that this is a process or inspection that may affect an essential design output?
- Explain how the change to the manufacturing process is related to the component and overall device design
- What are the potential hazards to the patient or user?
- What are the potential device failure modes and severities associated with this specific change?
- Explain, in detail, how each risk will be mitigated. What controls (e.g., monitoring, inspections, or design) are currently in place? Are new modes of control required?
- Based on the risk assessment, which testing is required and which testing does not need to be repeated (and why)?

The outcome of this risk assessment can help determine whether the change could affect device safety or effectiveness and justify the appropriate regulatory path. A summary of the risk assessment should be included in the applicable Annual Report or 30 Day Notice.
Example 1 – Change type of adhesive for bonding tip to catheter shaft.

Risk Assessment

Change is not related to MDRs or Field Actions. The tip and bonding process are both related to an essential design output (critical component). Additionally, bonding is considered a validated process. The potential hazard is tip separation which could lead to device separation and a fragment remaining in the body. The harm is the potential to occlude a vessel or initiate thrombosis. Severity is high and may require surgical intervention, but occurrence is expected to be low. (Bonding is a validated process with downstream inspections of the bond area.) This change will require validation of the bonding process and optimization of curing parameters and equipment (e.g., time, temperature, equipment settings). The potential risks with the adhesive change are that the bond will not be strong enough and that the adhesive will not be biocompatible. In order to address these potential risks, the following testing/mitigations are conducted:

- Catheter bond tensile strength testing and
- Two biocompatibility screening tests (Hemolysis and Cytotoxicity) will be conducted.

Based on this risk assessment, there is the potential to impact device safety or effectiveness so a 30 Day Notice is recommended.
Example 2- Supplier Change (Annual Report)

Tabular Summary of Change

<table>
<thead>
<tr>
<th>Description of Change</th>
<th>Risk Assessment</th>
<th>Summary of Mitigation Activities</th>
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<tbody>
<tr>
<td>Supplier change of a noncritical manufacturing aid (&quot;PVC rod&quot;) that does not involve any change in the PVC rod material or specifications.</td>
<td>The PVC rod is not related to an essential design output (aka. Not a critical component). The risks related to this manufacturing aid failing to meet its specifications could not result in any deviations to the finished device specifications or the manufacturing process, and, additionally, would be obvious during manufacturing. Because there is no change in materials or specifications (which was verified through testing) and there are no risks of the device itself being affected, this change would not affect safety or effectiveness of the device.</td>
<td>Verification testing confirmed the PVC rods function as intended.</td>
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Detailed Description of Change and Risk Analysis:

A change was made in the supplier of a non-critical tool ("PVC rod") used as a manufacturing aid in the assembly process of a catheter. The PVC rod is used to support the lumen of the delivery system primary sheaths during the cutting steps at assembly. The rod is inserted into the sheath to prevent it from collapsing during cutting and is removed from the sheath when cutting is complete. Consequently, the rod does not remain with the end product. An identical tool is being supplied by a new supplier due to the fact that the previous supplier has discontinued their distribution of PVC rods. An assessment of the impact of the PVC rod to the performance of the device determined that it is not a critical manufacturing aid, as the failure of the rod to meet its specifications could not result in any deviations to the finished device specifications or the manufacturing process, and, additionally, would be obvious during manufacturing. The PVC rods will continue to be supplied in available dimensions and will be identical in material composition to the rods supplied by the previous supplier. There are no changes to the incoming inspection of the PVC rods or the manufacturing process as a result of this change.

The risk analysis associated with the process (Process FMEA) was examined and it was determined that the change of PVC rod supplier did not create any new risks, nor were any risk rankings altered, given that the change in supplier did not result in any changes to the manufacturing aid materials or specifications. The PVC rods are non-critical manufacturing aids that could not affect the final performance or specifications of the device. Furthermore, failure of the PVC rods to meet specification could not result in any deviations to the manufacturing
process, and would be obvious during manufacturing. The results of the verification activities for the manufacturing aid supplier change demonstrated that the PVC rods from the new supplier function as intended and are identical to the rods from the current supplier. The risk analysis confirmed that neither the safety nor effectiveness of the device was impacted by this change, as there were no new risks identified, no changes to the finished product or process, and verification of the new rods was considered passed. This change was not associated with MDRs, failures or recalls of any kind, corrective actions, complaints, or in response to FDA warning letters or inspection findings.

Based on the aforementioned scientific considerations, it was shown that there is no effect on the safety or effectiveness of the device as a result of the new manufacturing aid supplier; therefore, in accordance with the regulations this change may properly be reported in the Annual Report.