1. Risk Assessment

Risk Assessment related to Cleaning Procedure for area and equipment in manufacturing area

A.	Risk Identification				Risk Analysis/ Evaluation				
S.No.	**Item or Process Step**	**Potential risk and / or Failure mode**	**Probable impact of potential risk and/or failure mode**	**Current control measures**	**S**	**O**	**D**	**RPN**	**Risk Level**
1	Cleaning of area / equipment after batch execution	- Fail to reduce previous product residue to acceptable limit	● Cleaning procedure is not adequate and defined. ● Residue drug let too long time after manufacturing. ● Sampling method is not adequate. ● Cleaning solvent is not appropriate to cleaning.	● Cleaning of equipment is done as per respective SOP for respective equipment and area cleaning. ● After completion of process equipment shall be dry cleaning at shift end and wet cleaning within 72 hrs. ● Cleaning validation has been performed with consider visual cleanliness, solubility criteria, therapeutic dose criteria and toxicity criteria. ● Purified water is used for cleaning of equipment. ● Sampling and testing has been done for final rinse / swab and water to be used for cleaning. ● Training given to concern person for	4	3	3	36	Medium risk

				cleaning of equipment.					
2	Microbial contamination	- Product loss due to contamination.	● Sanitization procedure not defined in SOP. ● Equipment hold time study not performed	● Wipe dismantle parts and interior as well as exterior surface of equipment with 70% IPA solution after cleaning and drying of equipment. ● Sanitization procedure is defined in respective equipment cleaning SOP. ● Equipment hold time study has been performed as per protocol. ● Cleaned equipment shall be hold for 72 hrs after type B cleaning (Wet cleaning).	4	2	2	16	Low risk
3	Failure in sampling technique	• Product failure • Product contamination	● Sampling technique is not defined. ● Drug residue is not dissolved in swabbing solvent. ● Sampling technician not trained.	● Rinse and swab sampling method has been defined in cleaning validation protocol. ● Hard to clean area of equipment has been consider for cleaning validation sampling. ● Swabbing solvent used for sampling as per product residue solubility. ● Swab area has been considered to calculate acceptance limit (MAR	4	2	1	8	Low risk

				value). ● Training given to concern for swab and rinse sampling during cleaning validation.					
4	Removal of cleaning solution with final rinse	• Product loss due to contamination	● Proliferation of microbial contamination	● Equipment is finally rinsed with purified water after cleaning. ● Final swab / rinse of equipment (hard to clean area) has been tested for visual cleanliness, MAR/ml and Microbial bio burden during cleaning validation. ● Wipe dismantle parts and interior as well as exterior surface of equipment with 70% IPA solution after cleaning and drying of equipment. ● Sanitization procedure is defined in respective equipment cleaning SOP. ● Equipment hold time study has been performed as per protocol.	4	2	2	16	Low risk
5	Clean equipment	• Product loss due to contamination	• Equipment hold time study not performed	• Equipment hold time study has been performed as per protocol.	4	2	1	8	Low risk

	hold time not defined	• Proliferation of microbial contamination	• Sanitization procedure not defined in SOP.	• Cleaned equipment shall be hold for 72 hrs after type B cleaning (wet cleaning). • Equipment exceeded clean equipment hold time is labeled with to be re-clean label as per SOP and re-cleaning has been done before use of equipment. - Wipe surface of equipment with 70% IPA solution after cleaning and drying of equipment. - Sanitization procedure is defined in respective equipment cleaning SOP.					
6	Failure in analytical detection level	• Product contamination	- Analytical method is not validated.	• Analytical method has been validated with consider worst case product drug. • Experience analyst has performed the analysis. • Analyst is qualified and trained for analysis. • Recovery from drug has been determined from spiked stainless steel plate at method validation.	4	2	2	16	Low risk

Conclusion:

1. Risk Assessment carried out related to cross contamination in production area. Through proper brainstorming work carried out by the cross functional team for assessment the risk and evaluation the risk.
2. The above mentioned current control measures and practices has been followed in manufacturing area. The processing room i.e. Granulation, compression, coating, encapsulation and packing cubical air contaminating positively pressure corridor is remote.

   Hence cross contamination possibility is minimize with the proposed action and mitigation plan for installation of electromagnetic lock provision on door, airlock door interlocking system and control of unauthorized person entry in production are through biometric access control system.

Conclusion- On the basis of risk rating calculation (RPN) and evaluation of risk assessment it has been concluded that the each potential failure mode of equipment cleaning procedure is comes in minor category and RPN is within acceptance limit. As per above risk assessment there is no impact on product quality and equipment cleaning will be controlled by routine monitoring of control measures.

3. Risk Review and Approval:

S.No.	Name	Designation	Department	Sign/Date
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2.				
3.				
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