



VIABLE AND NON-VIABLE PARTICLES: IMMINENT DANGER IN THE SURGERY WARD?



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OBJECTIVE: The displacement of adhered microorganisms to airborne particles increases the potential risk of contamination to patients. To nourish this theoretical foundation, it is necessary to discuss the hospitals clean rooms classification and to prove the direct relationship between the amount of non-viable particulate matter and the bioburden carries risks. Thus we developed a study at the CSSD and Surgery Ward of a Public Hospital of the city of São Paulo - Brazil.

METHOD: We used a Millipore Air Test equipment, wherewith impaction air samples in Petri dishes with specific culture medium for bacterial and fungal growth were collected. These plates were arranged at various points in two operating theaters, preparation and storage rooms. Simultaneously, air collections were performed by a particle counter, a methodology established by the Brazilian Standard ISO 14644-3: Clean rooms and associated controlled environments - Part 3: Test methods.

RESULTS:

COLLECTION SITE	PARTICLES 0,5 μ	BACTERIA	FUNGUS
Operating Theater 1	1,5 Million	<i>Micrococcus luteus</i> <i>Staphylococcus sp</i> <i>Bacillus sp</i>	-
Operating Theater 2	1,5 Million	<i>Micrococcus luteus</i> <i>Staphylococcus sp</i> <i>Bacillus sp</i>	-
CSSD - Preparation	4 Million	<i>Micrococcus luteus</i> <i>Staphylococcus sp</i> <i>Bacillus sp</i>	<i>Cladosporium</i>
CSSD - Storage	3,5 Million	<i>Micrococcus luteus</i> <i>Staphylococcus sp</i> <i>Bacillus sp</i>	<i>Cladosporium</i>



CONCLUSION: Due to the absence of specific legislation and in correlation with the pharmaceutical industry the areas were classified as ISO 8 with allowed particulates up to 3,520,000 / m³ of air. We believe that the high fiber detachment due to the handling of textiles in these areas was a determining factor for the negative result on the CSSD, proving the existence of linearity between the elements: the greater the amount of particulate matter, greater the bioburden. Although the identified microorganisms have low pathogenicity, the literature indicates a strong relationship between air contamination and the surgical wound, as each non-viable particle can carry up to 5 viable particles and their precipitation directly over the surgical incision, deposition in the instrument and / or on the medical team's clothing, cause infection. We suggest periodic measurement of particulates in critical hospital areas, as well as definition of specific legislation for their classification. In addition, we also suggest, the use of low fiber detachment garments; acquisition of unidirectional laminar flow ventilation systems and restriction of the number of people in the operating theater. The direct impact of these actions will certainly result in a reduction in the potential risk of surgical site infection, patient safety and cost reduction in healthcare.