A “settle plate” is an industry-standard, validated test method for determination of how many “colony forming units (CFUs)” result from settling of airborne contamination in a supposedly clean environment. This test method is commonly used for evaluation of airborne cleanliness in medical-industry cleanrooms.

TIDI Products conducted a controlled experiment in which a thoroughly cleaned stainless steel back-table in a simulated surgical-room setting (ISO 14644 compliant overall environment, HEPA filtered downdraft airflow) was covered with a Sterile-Z Back Table Cover using standard technique. A batch of standard “settle plates” was obtained and numbered, and two such settle plates were randomly chosen from the batch and carefully placed under the Sterile-Z Back Table Cover, exposed to the environment there. Two other settle plates were randomly chosen and placed on top of the Sterile-Z Back Table Cover, so as to evaluate the airborne environment without the Sterile-Z Back Table Cover’s barrier effect. A record was made of which plate was at each location.

After four hours of exposure, all the settle plates were carefully closed and sent to Biotest Laboratories, Inc., an accredited lab for settle plate evaluation. After incubation at 20 to 25° C, CFU counts were done.

For the first settle plate under the Sterile-Z Back Table Cover, there were zero CFUs. For the second settle plate under the Sterile-Z Back Table Cover, there were zero CFUs. For the first settle plate exposed to the simulated surgical-room setting, there were 38 CFUs. For the second settle plate exposed to the simulated surgical-room setting, there were 23 CFUs.

See back side for an additional study showing the effectiveness of covered operating-room trays.
Time-Dependent Contamination of Opened Sterile Operating-Room Trays

Background:
There are no clear guidelines for how long a sterile operating-room tray can be exposed to the open environment before the contamination risk becomes unacceptable. The purpose of this study was to determine the time until first contamination and the rate of time-dependent contamination of sterile trays that had been opened in a controlled operating-room environment. We also examined the effect of operating-room traffic on the contamination rate.

Methods:
Forty-five sterile trays were opened in a positive-air-flow operating room. The trays were randomly assigned to three groups. All trays were opened with use of sterile technique and were exposed for four hours. Culture specimens were obtained immediately after opening and every thirty minutes thereafter during the study period. Group 1 consisted of fifteen trays that were opened and left uncovered in a locked operating room (i.e., one with no traffic). Group 2 was identical to Group 1 with the addition of single-person traffic flowing in and out of the operating room from a nonsterile corridor every ten minutes. Group 3 included fifteen trays that were opened, immediately covered with a sterile surgical towel, and then left uncovered in a locked operating room (i.e., one with no traffic).

Results:
Three of the thirty uncovered trays (one left in the operating room with traffic and two left in the room with no traffic) were found to be contaminated immediately after opening. After those three trays were eliminated, the contamination rates recorded for the twenty-seven uncovered trays were 4% (one tray) at thirty minutes, 15% (four) at one hour, 22% (six) at two hours, 26% (seven) at three hours, and 30% (eight) at four hours. There was no difference in survival time ($p = 0.47$) or contamination rate ($p = 0.69$) between the uncovered trays in the room with traffic and those in the room without traffic. The covered trays were not contaminated during the testing period. The survival time for those trays was significantly longer ($p = 0.03$) and the contamination rate was significantly lower ($p = 0.02$) than those for the uncovered trays.

Conclusions:
Culture positivity correlated directly with the duration of open exposure of the uncovered operating-room trays. Light traffic in the operating room appeared to have no impact on the contamination risk. Coverage of surgical trays with a sterile towel significantly reduced the contamination risk.

Clinical Relevance:
Sterile trays should not be opened until they are specifically needed during the procedure. Coverage of opened trays with a sterile towel is recommended to minimize their exposure to environmental contaminants.

Defend the Sterile Field with Sterile-Z®

The Sterile-Z® Back Table Cover is designed to maintain sterility of surgical instruments and implants prior to use without risk of contaminating the sterile field upon removal.

AORN recently changed its recommended practices to allow for covering of back tables and other sterile fields in certain circumstances, as long as the cover can be removed without breaking sterility.

AORN guidelines state:
“When there is an unanticipated delay, or during periods of increased activity, a sterile field that has been prepared and will not be immediately used, may be covered with a sterile drape.”